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THE SCOTTISH
MEDICAL AND SURGICAL JOURNAL

EDINBURGH
Printed by
TURNBULL & SPEARS

THE SCOTTISH MEDICAL & SURGICAL JOURNAL

Under the Editorial Direction of

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VOLUME IX.

(JULY TO DECEMBER)

SEVEN PLATES, WITH SIX FIGURES AND CHARTS IN THE TEXT

EDINBURGH:
THE SCOTTISH MEDICAL & SURGICAL JOURNAL, LTD.
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THE SCOTTISH
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CLINICAL LECTURE ON TORSION OF THE PEDICLE AND ON RUPTURE IN CYSTIC ABDOMINAL TUMOURS (ONE PAROVARIAN AND ONE MULTILOCULAR OVARIAN), WITH REMARKS ON A THIRD COMPLICATED CASE

By D. BERRY HART, M.D., F.R.C.P.Ed.,
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Reported by GEORGE ROBERTSON, L.R.C.P. & S.Ed.,
Resident Surgeon, Ward XXXVI., Royal Infirmary

THE three cases are briefly as follows :—

CASE I. M. P., æt. 46, admitted 11th March 1901, on the recommendation of Dr M'Lachlan, Lockerbie, complaining of a swelling of the abdomen which had lasted for five months.

While "churning" one day she was suddenly seized with a sharp pain in the abdomen which, though felt across the whole of the lower part of that cavity, localised itself in the left iliac fossa.

The pain lasted forty-eight hours, and was so severe that she had to go to bed. After that it gradually diminished in severity, and at the end of a week she got out of bed and began work again.

It was this pain that drew her attention for the first time to a swelling in the abdomen.

For two months she kept well, but was again suddenly seized by an attack of pain similar to the first—this time she had to remain in bed for a fortnight. After this attack she

noticed that the swelling rapidly increased in size, but with the exception of its bulk caused her no inconvenience.

Her previous health had been quite good. Her occupation on a farm entailed a good deal of hard work.

Her family history was a satisfactory one. Her sister, however, suffered from a similar tumour of the abdomen.

Sexual.—Menstruation began at age of 14 years, was of the twenty-one day type, lasted about a week, and always was profuse.

Menopause.—Nine years ago.

Intermenstrual.—Slight leucorrhœa.

She was troubled during her present illness with frequency of micturition, and occasionally with pain during the act.

She had lost weight recently, and on admission was a thin woman, poorly developed, and with a sallow complexion.

Slight pyrexia was present during her illness.

Physical Examination.—The abdomen is almost uniformly distended by a swelling slightly more marked on the right side than on the left.

It occupies the hypogastric, umbilical, right and left iliac, and right and left lumbar regions. Peristalsis is seen in distended bowel above the umbilicus, and in each flank. The swelling is smooth and tense, with a well-defined margin above, but fading away in definition as it reached the flank. Dulness on percussion is got in the middle line extending from symphysis pubis below, to a little above the umbilicus. The flanks yield a tympanitic note. A fluid thrill is very easily elicited, nearly as well marked as in ascites.

Mensuration.—

At umbilicus, 29 inches.

Midway between umbilicus and symphysis pubis, 33 inches.

Anterior superior iliac spine to umbilicus on both sides, 7 inches.

Vaginal Examination.—Walls smooth and dry; cervix very small.

Bimanual.—The uterus is retroverted, and the tumour can be mapped out as already defined.

Circulatory System.—Systolic murmur with the first sound; second sound reduplicated.

Diagnosis.—Parovarian tumour with torsion of the pedicle and adhesions.

Operation on March 19th, and a parovarian tumour with twisted pedicle removed.

Universal adhesions were present, mainly to intestine and mesentery.

Many blood clots were found in the interior of the cyst.

Twenty-four hours after operation: patient felt well, a small quantity of serous bloody fluid aspirated through the glass drainage tube.

Forty-eight hours after operation: tube removed, patient doing well.

On tenth day stitches removed, and wound healed.

CASE II. A. D., æt. 14 years, admitted 25th April 1901, complaining of pain in the right side after taking food, and of swelling of the abdomen which she had noticed for two months, but which had increased greatly in size four days before admission.

This swelling was first noticed as a fulness of the lower part of the abdomen. The abdomen gradually increased in size for two months, and suddenly increased on a particular day—this sudden increase was not associated with pain.

As the tumour grew larger the patient lost flesh.

Her previous health had been quite good, except that she had Scarlatina four years ago from which albuminuria dates.

Sexual.—She has never menstruated, and has not felt any disturbance suggestive of that function.

Constipation present. Great frequency of micturition. No neuralgia of any of the pelvic nerves.

Physical Examination.—She is a pale anæmic-looking girl. Mammæ are small and undeveloped.

Abdomen.—A globular swelling of the abdomen is seen the size of a full-time pregnancy, extending from the symphysis pubis below to a point two fingers' breadth below the ensiform cartilage, and from Poupart's ligament to one finger breadth below the costal margin on each side.

The umbilicus protrudes, and is slightly pigmented. Dilated superficial veins are seen over the surface of the

abdomen. The flanks bulge slightly, especially upon the left side.

The swelling is tense and elastic to the touch, and a thrill can be got from side to side.

The tips of the fingers can be passed between the lowest part of the tumour and the symphysis pubis, while above it is with difficulty that one can pass the fingers between the tumour and the costal margin.

Percussion in the middle line gives a dull note with resistance all over, except for two fingers' breadth below the ensiform cartilage, where the note is tympanitic. From side to side, a dull note, with resistance, is got all over, except in the flanks, where there is resonance.

Neither the dulness nor the resonance change with change of the position of the patient. Nothing is heard by auscultation.

Mensuration.—

At costal margin, 25 inches.
„ umbilicus, 29 inches.
„ level of anterior superior iliac spine, 28 inches.

No vaginal examination was made, but it was ascertained by a rectal examination that no bulging into the pelvis existed, and that the uterus was small.

On the morning of the 4th of May, while the patient was in bed, she was suddenly seized with a severe pain in the abdomen. Vomiting accompanied the pain, and was repeated almost immediately afterwards; a marked alteration was noted in the physical signs of the abdomen.

Previously globular in shape it had now become flattened, and bulging markedly in the flanks. Previously hard and tense, it had now become soft and flaccid.

The centre of the abdomen, which had before been dull to percussion, yielded now a resonant note, while the flanks, previously resonant, now became dull.

The pulse rose to 120 per minute, but no great collapse was present.

As it was evident that a cyst had ruptured, operation was decided upon.

The abdomen was carefully prepared, and twelve hours after the accident the abdomen was opened, and the collapsed cyst removed.

CASE III. Mrs M., æt. 64, admitted 4th May 1901, on the recommendation of Dr J. Jamieson, complaining of a swelling of the abdomen, which she had noticed for eighteen months.

The swelling was noticed first in the lower part of the abdomen, but she had not called in a doctor to see her till it had reached its present size.

She never had suffered from pain in any region, but had, especially of late, become much thinner.

Previous Health.—She had had attacks of bronchitis several times, but none of them severe; otherwise she had been quite healthy.

Sexual.—Menstruation at age of sixteen, of the twenty-eight day type, lasting four days, was never excessive.

Intermenstrual.—Leucorrhœa.

Pregnancies.—Four; abortions, two.

Menopause.—Twenty-two years ago.

Frequency of micturition troubled the patient all through the eighteen months during which the swelling had grown.

Her family history is quite satisfactory. No rise of temperature nor attacks of pain ever took place.

Physical Examination.—Patient is a cachectic-looking old woman, very poorly developed. Skin harsh and dry.

Mammæ.—Are shrivelled and pendulous, and are soft all over.

Abdomen.—A large globular swelling occupies the whole of the abdomen. Its surface is quite even. Slightly more prominent on right side than on the left. Numerous dilated superficial veins are seen on the surface, and old *striæ gravidarum* from previous pregnancies. No bulging present in the flanks. The swelling is felt to fluctuate, is not very tense, and a very distinct thrill is elicited.

The abdominal wall is very thin and transparent-looking. The umbilicus protrudes. By percussion one gets a dull note all over, from the sternum to the symphysis pubis and from flank to flank.

In the lowest part of each flank, however, there is resonance to percussion. On changing the position of the patient no change is got in the percussion note. On auscultation nothing could be heard.

Mensuration.—At umbilicus, 47 inches.

Midway between umbilicus and symphysis pubis, 50 inches.

At costal margin, 38 inches.

Vaginal Examination.—Bulging in all the fornices.

Bimanual Examination.—Position of uterus could not be felt.

Circulatory System.—Soft blowing systolic murmur, with the first sound in the mitral area. Feeble impulse at apex.

Diagnosis.—Large ovarian tumour.

REMARKS.—Gentlemen,—You have heard the facts of the cases, and I now wish specially to direct your attention to the questions of torsion of the pedicle and of rupture of ovarian cysts. They are not merely points of academic interest, but any of you as assistants or practitioners may meet with them, and while you may not have facilities for treatment, the patient's life may depend on your prompt recognition of the nature of the attack and of the necessary remedy—an operative one of course.

In the first case read the diagnosis was torsion of the pedicle in a parovarian cyst with general adhesions. How was this made?

In the first place the patient who had this tumour had two attacks of sudden pain. The first came on whilst she was churning, and made her go to bed; after the second one the tumour increased in size.

These symptoms justify the diagnosis of "marked torsion" of the pedicle. I say "marked torsion," and not "torsion" merely, for a reason to be given presently.

I diagnosed "parovarian tumour" because of the perfect thrill I got on "flicking," a result one usually gets in an ordinary parovarian, or where free fluid lies between the tumour and the anterior abdominal wall. I must point out, however, that in this case the walls were a little thickened and blood clot was present—conditions which should have interfered with the perfectness of the thrill, but apparently did not.

One cannot diagnose localised adhesions in cystic tumours with any degree of accuracy; but in this case the intestine ran up so close to the tumour, and so far on its periphery, that I felt sure we should get them well marked.

This diagnosis having been made, only one treatment could

be adopted—removal by abdominal section. The points noteworthy during the operation were—(1) *the difficulty of opening the peritoneal cavity, owing to the adhesions;* (2) *the altered colour of the peritoneum, a brownish tinge;* and (3) *the clots in the fluid.*

(1) *The difficulty in opening the peritoneal cavity.*—When one finds this, the best thing is to cut higher up where there are no adhesions at the upper pole of the tumour, and then to separate down. If one tries to cut on in the line of the real incision, the tumour may be opened, fluid escape, and this may pass into the peritoneal cavity during the after manipulations. Such an occurrence should always be avoided, and some operators do not tap unless in large tumours, making the incision always as big as will let them remove even a fairly big one intact. There is a great deal to be said in favour of this plan.

I now found adhesions in the whole periphery of the tumour, mainly to small intestine and mesentery. By pressing with a "swab" they separated easily, but there was a good deal of venous oozing requiring ligature and pressure to arrest it.

When the pedicle was reached it was found excessively twisted from right to left, in fact nearly separated, and the tumour, when removed after application of a ligature to the pedicle, was found to be a right parovarian one with the right ovary present. A certain amount of oozing went on despite pressure, but I closed the abdomen and introduced a Keith glass drainage-tube at the lower angle, remembering Tait's maxim of this being one of the best means to arrest such. The drainage-tube was guided down to the pouch of Douglas, a strip of iodoform gauze introduced into it, and a piece of the flange india-rubber tissue placed between it and the skin. Iodoform gauze was now packed round, and instructions given to aspirate fluid from the tube every few hours, and each time to give the tube a turn round to prevent omentum passing into the little apertures in the tube. Should one omit this precaution, tags of omentum will pass in, swell up and prevent withdrawal of the tube. You have, therefore, in removing the tube to draw it well up, tie catgut round the omentum outside the hole and cut with scissors. The abdominal stitch at the tube has its second loop made and tightened as the tube is withdrawn.

Drainage is now employed rarely, as it is always better to

close the peritoneal cavity when thoroughly dry and no oozing going on, but this is a case where a tube helps greatly. It was finally removed in forty-eight hours.

As is often the case where many adhesions are present, the patient made an uninterrupted recovery.

I now wish to discuss the nature and cause of torsion of the pedicle.

Torsion of the pedicle usually occurs in cystic or solid tumours of the ovary or in parovarian tumours. It has been noted, however, in the lower uterine segment of the puerperal uterus, and in the lower part of the pregnant cornu of the cow, so that it is not confined to the ovary and parovarium. A certain amount of torsion of the pedicle occurs in most ovarian tumours, up to 90 degrees, without symptoms. *The torsion usually so happens that right-sided tumours twist to the left, and left-sided ones to the right.* We may put this generally by saying that the torsion is toward the mesial plane. What we are taking up to-day is the marked torsion which, of course, gives rise to the symptoms we have considered.

As to the cause, there are two great explanations. The one followed by Fischer, H. W. Freund, Cario, Simpson, would refer the torsion to a law of spirality by which the ovary and its pedicle (ovarian ligament, broad ligament, tube) tend to grow spirally and thus produce the torsion. There is something a little fascinating in the theory, but it seems to me to have more imagination than proof. When an ovarian tumour begins to grow, it lies behind the broad ligament (first stage), and as it increases in size, in front of it (second stage). It is in the second stage that the torsion begins.

It seems to me more in accordance with our knowledge to refer the torsion to three factors: (1) the mooring action of the pedicle on one part of the tumour; (2) the action of intra-abdominal pressure during expiration; and (3) the greater range of movement of the abdominal walls in the anterior mesial region and the comparatively less range at the sides. The effect of all these will be to rotate tumours as already given, left-sided ones to the right and *vice versa*, and thus to twist the pedicle. In the case given the first torsion happened during "churning," etc., with increased straining. The result of a torsion beyond 90° is probably to compress veins and

nerves first, then the arteries; to cause some congestion of the tumour, with increase of fluid contents, and thus pain, increase of size, with, in bad cases, an aseptic peritonitis with adhesions. The torsion cuts off the blood supply, but the adhesions may ultimately restore it.

Marked torsion may occur in about 8 per cent of ovarian cases; is most frequent in dermoids; while some amount of torsion is found in most cases as I have already said.

In our second case there was some torsion of the pedicle but not marked. It had caused, however, some œdema of the broad ligament. The special point was that the cyst suddenly perforated at one point, and the colloid contents of one cyst escaped into the peritoneal cavity. The patient, who was only fourteen years of age, was waiting operation, but one morning at 3 A.M. she was seized with pain, vomited repeatedly, and on examination a distinct alteration in the abdominal contour was noticed. Its consistence was now soft and flaccid instead of being tense, and the flanks bulged. One could feel the collapsed cyst, while the note at the umbilicus was clear, that at the flanks dull—the reverse of the former condition. The pulse was now rapid, one hundred and twenty, and the temperature a little up.

There was thus not the least doubt the cyst had ruptured, and I therefore opened the abdomen in the afternoon, as I had already arranged for two sections in the forenoon.

When the abdomen was opened, colloid sticky fluid was found and a collapsed cyst pulled out. There was one opening admitting the middle finger and also one beginning, close to the former. In the latter it was the outer coat that was yielding, an interesting fact.

After tying the pedicle I noticed a hæmatoma below the ligature and near it a thickened œdematous portion. I laid open the hæmatoma lest it should increase and dissect off the ligature, tied a small artery and brought the peritoneal edges of the incision together.

The last thing to do was to wash out the peritoneal cavity. This was done by pouring in abundance of boiled water and letting it run out, the patient being tilted on her side to facilitate this, and then the drying out was completed in the dorsal posture with sterilized swabs. I did not drain.

The patient recovered well. There was a little pain on the third day over the site of the pedicle and the temperature rose slightly. The pulse kept up, but has gradually fallen and is now normal.

Perforation of a cyst is fairly common. A parovarian cyst may, when it ruptures, give no special symptoms except a large discharge of urine by the kidneys, and it may or may not fill up again. In the latter case a cure may result. The rupture of a papillomatous cyst is serious owing to peritoneal infection.

An ordinary ovarian cyst may rupture and give rise to no symptoms, or it may set up a severe and acute condition. In this case the rise of pulse and look of the patient made me operate as soon as possible. What caused this pulse rise it is difficult to say, as there was no peritonitis.

In this special case the softness of the cyst wall and the torsion of the pedicle seem to me to have determined the rupture. There had been no manipulation of the abdomen on that evening, and no fall or blow. I have seen rupture of one occur as the result of a long cycle ride, and we should remember the possibility of perforation and always practise manipulation of such gently.

The necessity of operation is evident, but the possibility of peritoneal infection and ultimate malignant peritonitis in some cases must not be lost sight of.

The third case illustrates a valuable maxim, viz., that it is not always possible to diagnose what may be in store for one in an abdominal section. I diagnosed a large cystic ovarian, supposed it an easy case, and found a large cystic tumour, mainly parovarian, but partly ovarian; double sarcomata of the broad ligaments, and a cystic ovarian mass developing below the pelvic peritoneum. These all had to be removed, along with the upper half of the uterus, and the operation lasted about two hours.

The large cystic tumour (right-sided) was easily dealt with by ligature, as it had a broad but membranous pedicle. When it had been removed I discovered the condition in the broad ligaments. Placing the patient in the Trendelenburg position, I tied the right and left ovarians, enucleated the masses, slit the capsule of the pelvic tumour, and enucleated it too. All this

was effected without hæmorrhage. On inspecting the capsule I found, however, smaller papillomatous masses running up close to the uterus, and incorporated with it. I therefore ligatured the right uterine artery at the margin of the uterus, cut across the uterus, and then after clamping temporarily the uterine and round ligament arteries of the left side (the ovarians had previously been tied), secured them with ligatures.

The bed of the pelvic tumour had now to be dealt with. As the upper edges of the peritoneum could not be easily brought up to the abdominal wound, I opened from below through the posterior fornix vaginæ, and plugged the cavity with iodoform gauze, the lower end of the strip passing into the vagina. The peritoneum was then closed over the gauze by continuous silk suture, and the cut peritoneal edges of the broad ligaments, uterus and pedicle similarly treated. The abdominal wound was stitched, and the peritoneal cavity was thus left closed off and dry, with no oozing points, conditions which with asepsis are the great factors of safety in operating. The gauze was removed on the sixth day.

This patient did well, so far as the abdomen was concerned, until bronchitis came on, and she died from heart failure on the eleventh day. The abdominal conditions were nomal, except that on the last two days some fœtid discharge was washed out of the extra-peritoneal space *per vaginam*. One must note here the effect of the other systems in determining results.

The final points I wish to direct your attention to in this case are the great value of the Trendelenburg position in such a case, and the command one gets over hæmorrhage by the ligature of the uterine, round ligament and ovarian arteries. When these are secured, broad ligament and pelvic enucleations and hysterectomy are practically bloodless operations. I hope specially to illustrate this to you subsequently. With the patient in the Trendelenburg position one operates on pelvic structures almost as if they lay on a flat surface. Fuller details on these points I hope to give you afterwards in considering subsequent cases.

ALOPECIA AREATA: A CLINICAL AND EXPERIMENTAL STUDY

By NORMAN WALKER, M.D., F.R.C.P., Edinburgh
and
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THE investigations, the results of which are embodied in this paper, were undertaken in consequence of the selection of one of us to share in the introduction of the discussion on this subject at the International Congress of Dermatology which formed a part of the International Congress of Medicine in Paris last summer. The work was done in the Skin Department and Pathological Laboratory of the Royal Infirmary, Edinburgh, and we desire to express our thanks to Dr Allan Jamieson for his generosity in allowing us the use of all the cases of the disease which came under observation for several months, and to Doctors Fleming and Welsh for their kindness and assistance in the laboratory.

The etiology of Alopecia Areata is a subject which has been much and often discussed, and about it still remains the old difference of opinion. Is the disease due to the local action of the parasite, or is it associated with some nerve disorder: these are the questions which have been debated at Dermatological Congresses at intervals for many years. Those who hold the theory that the disease in some way is under the influence of the nerves support themselves by the statement that it occurs in delicate people, that it is often associated with headaches, and that it has been observed to follow definite lesions of nerves. Those who regard it as parasitic point out that the shape of the lesion is entirely against an association with the distribution of any particular nerve. Buechner's paper with diagrams of the distribution of the cutaneous nerves on the scalp is certainly a piece of very destructive criticism to the nerve theory. They also note that the disease occurs in epidemics, and that frequently more or less presumptive evidence of contagion can be obtained. There are two other theories which should be mentioned, viz., those

of Hutchinson and Radcliffe Crocker. Hutchinson believes alopecia areata to be a sequel of ringworm and has noted that a previous history of that disease, either in the patient or in some more or less near relative, will generally be found. Crocker believes that many cases of alopecia areata actually are cases of unrecognised ringworm. These theories were kept in mind during our investigation, and inquiries bearing on them were made in every case.

Alopecia areata appears to be an exceedingly common disease in Edinburgh. Hardly a waiting day passed without our seeing a case, and we were enabled to collect and investigate in three months more than twice as many cases as Professor Pavloff, who was investigating the subject for the same purpose in St Petersburg, did in a year. Altogether sixty-three cases have been carefully examined, and cultivations have been made from a large number of them. We consulted the registers of the Skin Department to determine whether there was any seasonal incidence or any evidence of epidemic occurrence. The table is annexed, and it will be seen that in each 500 cases the numbers are curiously similar.

The proportion of alopecia areata to all the cases coming to the Skin Department is roughly 5 per cent. There is a greater incidence in the male than in the female. Of 207 consecutive cases, 122 were males and 85 females. With reference to age, most cases occur between the ages of 10 and 20. It was equally common between 20 and 30, and 30 and 45; over 45 the disease is rare.

The hairs from each case were examined microscopically. They were stained with Morris' modification of Gram's method, and we were invariably successful in finding organisms upon them, some of the hairs being sheathed with bacteria almost as closely as are the hairs in ringworm with fungus. In examining the hairs we were able to distinguish very clearly two kinds of hair. First, the typical exclamation hair, with its atrophied neck, and the small portion of adherent root sheath, which makes the dot at the bottom. This hair is usually fairly firmly adherent, and a small amount of force is required to remove it. In many cases, and notably in the cases of greater severity, such as those which have become complete, there is another

kind of hair which has not the characteristic point of exclamation form. If the part protruding from the follicle is laid hold of with forceps the hair may be lifted out without the patient being in the least conscious of it. The amount beneath the surface is surprisingly great, and there is often, just at the level of the skin, a collar of a substance which, when examined, usually proves to be sebaceous material teeming with micro-organisms.

In making cultivations we endeavour to follow the lines laid down by M. Saboraud, using his medium, which is—

Distilled water, . . .	1000
Granulated peptone (Chassing), .	20
Glycerine, ...	40
Agar agar, ...	13
Glacial acetic acid, . . .	♏ iv

We found that if elaborate precautions were taken to sterilize the surface of the skin no results were obtained; consequently all the precautions we took were to wipe the skin with alcohol and to exercise ordinary care in inoculating the hairs on the medium. If the hairs after removal were soaked in alcohol, a plan one frequently follows in the cultivation of ringworm, they invariably remained sterile, an observation we think which entirely disproves Crocker's theory of the disease. With one exception all the inoculated hairs grew a glistening white growth. Saboraud compares it to porcelain, and it is apparently the organism described by Welch as the S. epidermidis albus. Saboraud observed that after from two to three weeks other little colonies had developed on this white growth—they were of a brick red colour—and when examined microscopically proved to be made up of fine bacilli, which he identified with the organisms found in acne and seborrhœa.

Saboraud's observations briefly are that the disease is due to the growth of a fine bacillus, which he believes to be identical with that which is found in seborrhœa and in acne vulgaris. This organism, he suggests, produces a toxin which stimulates the oily secretion of the glands and leads, as does seborrhœa, to the gradual death of the hair; indeed he regards alopecia areata as an acute circumscribed form of seborrhœa. In this

connection we should note that we observed the presence of seborrhœa in a large proportion of our cases. Acne is not a common accompaniment of alopecia areata, but one of our cases seemed to lend some support to his theory.

An exceedingly robust young man of twenty, a corporal in the Scots Greys, came to the Infirmary one day. He suffered from almost total alopecia, and his scalp was studded with numerous large, perfectly typical comedones, which, as these bodies usually do, contained myriads of fine bacilli. He had no nerve disturbances, and was exceedingly grieved that this ailment had prevented his being sent to the war in South Africa.

Saboraud attributes all the evil effects to the bacillus, and ignores altogether any possible pathogenic power in the white coccus. In one of our cases there developed a growth which we believed to be the brick red organism referred to by Saboraud. We were unable to obtain any daughter colonies, and are therefore not in a position to accept or disprove his statements. In some subsequent cultivations from acne we have seen developed, after many weeks' growth, secondary colonies such as he has described, but have not been able to satisfy ourselves that they really consisted of different organisms. A peculiar phenomenon occurred with several of our earlier cultures, namely that the white colour was gradually replaced by an iridescent black. We were first inclined to attach importance to this, and it formed a part of our communication to the Paris Congress, but we are now inclined to regard it as due to some subtle chemical change in the medium, as we have not observed it in our more recent cultivations.

We think it unnecessary to go into detail as to the method of growth of this white coccus, for it is clearly the one originally described by Professor Welch of Baltimore, U.S.A. We had no opportunity of doing any inoculation experiments, but Pavloff of St Petersburg, where facilities are greater than in this country, had experiments made on rabbits which were followed by a desquamative dermatitis and "alopecie en aires," a fact which singularly seems to have escaped the attention of many observers.

In two cases we excised portions of the skin and examined

them histologically; in both cases the organisms were found in the follicles, and in both we were satisfied and were able to satisfy more competent histologists that there were slight inflammatory changes present, viz., parakaratosis of the surface epidermis and some infiltration around the vessels. At a former Dermatological Congress in America, where this disease was the subject of one of the principal discussions, Dr Robinson of New York showed sections demonstrating the presence of organisms in the lymph spaces of the corium. We sought very carefully for these but were unable to convince ourselves of their presence. As sections invariably contained well-stained organisms in the follicles, we think that it would have been impossible for any present in the lymphatics to have escaped our notice.

From a reference to the large Table it will be seen that we have made inquiry along the lines suggested by the various different theories.

Ringworm.—Fourteen out of sixty-two cases had had ringworm either themselves or in the person of a relative, but the period which had usually elapsed seemed to preclude the possibility that there was any connection between the two. Even the slight support which seems to be given in one case (23) disappeared when one found out that the brothers and sisters who had ringworm were all cured before the alopecia areata children were born. Inquiries made in a class of sixteen students at the Medical College for Women, Minto House, further show how little importance is to be attached to the previous history of ringworm. None of the ladies suffered from alopecia areata. In four out of the sixteen families concerned ringworm had occurred, and in two others there had been cases of alopecia areata. Thus a history of ringworm in the family is apparently as common in those who have not alopecia areata as in those who have.

As already stated we believe our observations, especially combined with subsequent ones on ringworm, to have entirely disposed of Crocker's contention that alopecia areata is unrecognised ringworm, cultivations never having grown a vestige of fungus.

In order to obtain pure cultivations of the ringworm fungus,

our practice is to soak the diseased hairs for a varying number of minutes in absolute alcohol, which has the property of destroying bacteria without apparently interfering with the vitality of the fungus. Experimentally we have soaked ringworm hairs so long as half an hour in absolute alcohol, and have, nevertheless, got successful cultivations from them.

Hairs from cases of alopecia areata, if soaked in alcohol even for five minutes, invariably proved sterile.

Contagion.—Our notes with regard to Contagion we give in full to avoid any unintentional bias.

Case 1 was a railway guard who had his hair cut and was shaved regularly by the same barber. On drawing the barber's attention to the patch, the barber remarked that several others of his customers had the same disease. In case 4, several boys at the same school were affected. In case 7, which we regarded as most suggestive of a nerve theory, the boy's sister, a girl of 10, pale and delicate, afterwards came to hospital with diffuse alopecia, the hair all over the scalp being markedly thin. The mother of case 8 had alopecia areata when she was a girl. We do not suggest that this is evidence of contagion, but mention it as having as much bearing on that theory as some of our ringworm cases.

A brother of case 10 has had alopecia areata for years.

Case 12 mentioned that his most intimate friend had had the disease for six months.

Case 20 had alopecia areata eight years ago. The brother of case 23 has the disease, as had the sister of case 30.

Case 31 had the disease twelve months ago.

Case 32 mentioned that three of his friends had the disease, and case 33 that an intimate friend developed the disease six months ago. Three boys at the same school as Case 36 have the disease. Case 37 had an attack with complete loss of hair four years ago. Case 47 mentioned the existence of another case in the house—a fellow lodger. A friend of case 48 had the disease before the patient.

A brother of case 51 had the disease five years ago.

Case 62 is the brother of case 61.

It will be seen from this that no fewer than 18 cases had a history of possible contagion, and that this number exceeds the

proportion of ringworm in the same list of cases, although ringworm is a much commoner disease than alopecia areata.

We have noted the presence or absence of seborrhœa, because of Saboraud's view that the same organism is responsible for both, and in about 70 per cent. of the cases this was found. Seborrhœa is so exceedingly common that we question whether this observation is to be regarded as a really weighty piece of evidence, but we should state that we made numerous cultivations from cases of seborrhœa and found frequently the same white organism as in alopecia areata.

With reference to the nerve theory, only one case came under our notice where it seemed likely that such a connection could be traced. The boy was pale and delicate; the patch was situated on the occipital region and was irregular in shape. It remained for many months in this situation without extending and without the development of any new spots.

Case 42, in which the pigment of the hair disappeared over rounded areas several months before any typical patches of alopecia developed, also suggests some mysterious nerve influence, although the patient is in robust health.

In several cases it will be noted that patients complain of headaches. To put it more correctly one should say that they admitted headaches, for if they did not volunteer the statement to ordinary inquiry we pressed home the matter, and where "none" appears in that column it may be taken that the patient denied having headaches at all. A case is entered as having migraine, but as the patient had had migraine all her life and alopecia areata only for a month or two, it seems forced to bring the two into connection.

It is difficult to understand what is the particular nerve influence which causes the hair to fall out over a rounded patch, which could lead to a regular peripheral extension of this loss, and to the development of similar rounded areas irregularly all over the body, and the results of our enquiry go, we think, to show that the nervous element in this disease has been greatly overrated.

TABLE I.

STATISTICS OF 4000 CONSECUTIVE CASES OF SKIN DISEASE WITH THE PROPORTION OF ALOPECIA AREATA.

DATE.	NUMBER.	CASES.
Jan. 1st — June 19th	1 — 500	29; Males, 16 Females, 13
June 19th — Dec. 8th	501 — 1000	31; „ 24 „ 7
Dec. 8th — May 10th	1001 — 1500	20; „ 9 „ 11
May 10th — Nov. 5th	1501 — 2000	27; „ 14 „ 13
Nov. 5th — April 5th	2001 — 2500	27; „ 17 „ 10
April 5th — Aug. 9th	2501 — 3000	17; „ 10 „ 7
Aug. 9th — Jan. 27th	3001 — 3500	28; „ 15 „ 13
Jan. 27th — June 23rd 1900	3501 — 4000	28; „ 17 „ 11
		122 85
		207

AGES OF THOSE AFFECTED.

	10 years,	40
10 — 15	„	41
15 — 20	„	39
20 — 30	„	42
30 — 45	„	40
Over 45	„	5
		207

The cases for this year are not included as, owing to many friends knowing of the research, cases were sent which would otherwise not have come to the Infirmary, and the numbers during the past twelve months might be misleading.

TABLE II.

Name.	Age.	Duration.	Extent of Disease.	Remarks about Hairs.	Contagion.	Ringworm.	Headaches or Other Nerve Symptoms.
1. John W.	36	7 months	Numerous spots on scalp, one patch on moustache, one on right cheek	Lift out easily	Was shaved and had hair cut by a barber who has several other cases of Alop. Areata	15 years ago	None. Man strong and healthy
2. Christina C.	23	2 years	Very extensive, several large patches run together	Lift out easily	None	None	None. Patient healthy
3. John D.	14	3 months	7 patches scattered over head	In the centre of some of the patches there are a few long hairs	None	None	None
4. George F.	9	4 years	Temple to temple. Ophiasis	Exclamation hairs required a little pull to lift out	Several boys in his school have Alopecia	There is a "mangy" dog in the house, possibly Ringworm	None
5. John H.	34	3 months	2 patches on temple posteriorly, 2 patches on occipital region	...	None	None	None
6. Robert H.	23	4 months	12 patches scattered over the head, 1 patch on chin	Lift out easily	None	None	None
7. Alex. Q.	13	6 weeks	Irregularly shaped patch over occipital region	No exclamation hairs, and the hair is very fine	None. A sister has since come with diffuse Alop. Areata	None	Patient very anæmic, and neurotic
8. Mary S.	27	5 years	Numerous scattered small patches	Few exclamation hairs	Mother had Alop. Areata before patient was born	None	None
9. Janet H.	12	6 weeks	4 large patches running together on occiput	Numerous exclamation hairs	None	None	Child a little pale, but seems quite healthy
10. Tom B.	10	1 year	Extent not noted	Not many exclamation hairs	Brother has had Alop. Areata for 20 years and still has it	None	None
11. Oliver H.	14	1 week	1 patch occipital region	Very numerous exclamation hairs. Came out easily	None	None	None

Name.	Age	Duration.	Extent of Disease.	Remarks about Hairs.	Contagion.	Ringworm.	Headaches or Other Nerve Symptoms.
12. Alex. W.	17	5 years	Very extensive, almost bald	Hairs lifted out with a pull. Black pits	An intimate friend has had disease for 6 months	None	None
13. Kate W.	17	5 months	1 large patch at nape of neck	Fairly numerous exclamation hairs	None	None	None
14. John P.	27	2 years	1 patch vertex, 1 patch temporo frontal	Hairs lifted out easily	None	None	Had influenza before Alopecia appeared. Suffers from headaches
15. Alex. M'K.	11	1 year	...	No further history	was taken of this case		
16. Lizzie M.	16	12 months	Almost complete baldness. Began on occipital region	The exclamation hairs lifted out with difficulty leaving black pits	None	None	None
17. James Q.	10	4 months	Large patch on vertex	Exclamation hair lift out very easily	None	None	None
18. David S.	19	4 years	Very extensive over occiput. Began in small round spots	Numerous exclamation hairs	None	None	None
19. Alex. K.	25	9 months. Recent patch 6 days old	Several diffusely scattered round patches	Numerous exclamation hairs on recent patch. Lifted out easily	None	None	None
20. John A.	17	7 months	4 large patches	Lift out very easily	Had Alop. Areata 8 years ago	None	Has severe frontal headaches
21. David B.	16	2 months	1 large patch	Numerous exclamation hairs	None	None	Migraine
22. Mary S.	13	3 months	4 large patches	Hairs very adherent, leave black pits	None	None	Headaches
23. Maggie T.	11	12 months	1 patch at nape of neck 1 ,, right parietal 1 ,, left frontal	Numerous exclamation hairs	She slept with brother who now has Alop. Areata, but is recovering much more quickly	9 older children had Ringworm in Musselboro. This girl and her brother in Edinburgh had never had this disease	None
24. Agnes R.	10	2 years	Almost complete baldness	Hairs lift out with difficulty	None	None	Headaches. Chorea 3 times

Name.	Age.	Duration.	Extent of Disease.	Remarks about Hairs.	Contagion.	Ringworm.	Headaches or Other Nerve Symptoms.
25. Amy N.	24	3 months	Small patch nape of neck	Hair turning grey. No exclamation hairs	None	None	None
26. Mary S.	35	6 years	Diffuse all over head	Hair comes out in crops and grows again	None	None	None
27. Walter R.	8	2 years	Complete baldness	Hair fallen out four times, comes in again	None	3 years ago, was cured in 7 weeks	None
28. Nettie H.	15	7 years	Numerous patches diffuse	Plenty exclamation hairs	None	None	Very Neurotic
29. Jane G.	11	8 months	1 dozen small patches diffuse	Hairs lift out easily	None	Step-brother had disease 4 years before patient was born	None
30. Kate L.	36	2 years	General baldness	Hairs difficult to pull out. Black pits left	Sister had Alop. two years before patient developed it, though in meantime sister died. Patient slept with her	None	None
31. Matthew G.	12	3 months	Very general patches	...	12 months ago patient had patch of Alop. which got quite well	Next door neighbour had Ringworm 10 months ago	Migraine
32. Robert M.	33	About 1 year	...	There were only a few short hairs which lifted out easily	3 of his friends have had the disease	None	None
33. Duncan R.	23	12 years	Very numerous patches	Exclamation hairs lift out very easily	An intimate friend developed disease 6 months ago	Brother had Ringworm on face 13 years ago	None
34. Lizzie B.	6	6 months	Almost complete baldness	Exclamation hairs at margin are very few. Lift out with difficulty. Black pits	None	None	None
35. William R.	32	2 weeks	6 small patches at back of head	Exclamation hairs very numerous.	None	None	None
36. John B.	14	Some years	Complete baldness. Began occipital region	No exclamation hairs. Numerous downy ones.	3 boys at same school have Alop. Areata	5 of his family have had disease, patient not	None

Name.	Age.	Duration.	Extent of Disease	Remarks about Hairs.	Contagion.	Ringworm.	Headaches or Other Nerve Symptoms.
37. Mrs O.	34	6 months	...	...	Had an attack 4 years ago, with complete loss of hair	None	Complained of pain in the skin—no actual headache
38. William L.	10	6 months	...	...	...	None	Headaches preceded the appearance of the disease
39. Robert M'L.	15	18 months	One patch	...	None	None	None
40. John B.	26	9 months	Numerous spots, eyebrows, eyelashes gone	...	None	None	General health excellent
41. William R.	19	3 months	Several patches	Numerous exclamation hairs in centre	None	None	None
42. David S.	47	2 years	This case was exceptional in many ways. It commenced not with loss of hair, but with loss of colour in round patches, and the patient's head presented a peculiar piebald appearance. The white hairs are much thinner than his healthy black ones, but there are no exclamation hairs among them. Within the last few months typical patches of Alopecia Areata have developed, affecting the occipital and beard regions. On the patch on the neck are short, typical exclamation hairs. He suffered from headaches 15 or 20 years ago, and has had none since	...	...	...	...

Name.	Age.	Duration.	Extent of Disease.	Remarks about Hairs.	Contagion.	Ringworm.	Headaches or Other Nerve Symptoms.
43. Francis M.	27	1 year	9 spots all over head	...	None	None	None
44. George C.	26	1 month	...	None	...	When a boy	None
45. Mrs B.	34	3 months	1 spot	...	None	None	General health indifferent, but no headaches
46. Barbara W.	8	2 months	1 spot the size of a shilling and 2 smaller spots	...	None	None	None
47. Janet M.	21	7 years	Numerous spots (large)	...	None	None	None
48. Charles S.	25	10 days	...	...	Another case of the disease in the house	In childhood	No headaches, but blames a blow for the development of the disease
49. Hugh H.	21	3 years	One large, numerous small spots	...	Another boy, a friend, had the disease before him	None	None
50. Harry W.	33	7 or 8 weeks	5 spots on scalp, 2 on chin	Exclamation hairs come out with difficulty	He blames the barber but has no evidence in support	One of his children recently had Ringworm	None
51. Robert G.	16	3 months	Nearly half the scalp affected.	Very few exclamation hairs	None	None	None
52. George C.	18	6 months	About a dozen spots	...	A brother had the disease 5 years ago	None	None
53. Barbara G.	12	3 years	...	...	None	In a brother before she was born	Occasional headaches and sickness
54. James M.	24	18 days	One spot	...	A young man who sleeps with him is said to have the disease	None	None
55. John W.	20	11 months	Practically complete	There are a few long hairs and numerous comedones	None	Had Ringworm on arm, got from his horse before disease occurred	Had headaches as a boy, but these have left him for some years
56. Bella F.	10	14 days	...	...	None	None	...
57. Thomas L.	9	1 month	One patch behind ear, 2 smaller ones	Exclamation hairs come out with difficulty	...	Sister had Ringworm 4 years ago	...

Name.	Age.	Duration.	Extent of Disease.	Remarks about Hairs.	Contagion.	Ringworm.	Headaches or Other Nerve Symptoms.
58. Marjory P.	12	3½ months	One half-crown patch	Hairs unusually long and are extracted with some difficulty	None	None	Complains of frontal headaches
59. Jane W.	25	6 months	Numerous spots	...	None	A brother had Ringworm when a boy	Has had headaches for 5 years
60. Alex. Y.	10	10 months	...	...	None	A twin brother had one spot of Ringworm on his body 8 months ago	...
61. Robert C.	12	About 4 months	...	...	None	None	None
62. Duncan G.	10	1st attack 7 years ago Present 3 years ago	Complete	There are altogether about 2 doz. stumps of hair which lift out of the follicles as in Type II.	None	None	Nervous boy suffering from night terrors
63. James G.	8	First noticed 2 months ago	Small round patches which increased in size and number. Now there is one occipital patch and several smaller ones. The hair at the margin of these lift out easily	Very few of Type I. hairs, but several of Type II. which are a little more difficult to remove than usual. Scattered over the surface are a number of long hairs, fairly firmly adherent	Brother of Case 62	None	He has Tuberculous Glands in the neck which have been operated on No Neuralgia

SOME IMPRESSIONS OF SPAS

Read before the Bath Branch of the British Medical Association

By CHARLES BEGG, M.B., C.M., Bath

MR PRESIDENT AND GENTLEMEN,—In the spring of 1900 I spent some months at various Continental spas, and some of the impressions derived are the subject matter of my paper to-night. I formed impressions as to the necessity of spas in the first place, of the proper class of patient to be sent to them in the second place, and finally, of the requirements of a first-class, up-to-date spa. In forming these impressions it was useful and highly interesting to be able to contrast the up-to-date modern spa as illustrated by any of the well-known ones on the Continent with the primitive spa as seen in such a country as Japan, where the various mineral waters have not had the advantage of extensive advertising and being run by an enlightened Corporation or other syndicate, but have to depend on their inherent merits for their reputation. Had I taken up the subject without such a preparation I fear I should have had a difficulty to start with, for it cannot fail to strike the anxious inquirer when he reads the vast amount of literature he rapidly acquires, thanks to the kindness of the authors practising at the spas he visits, that it seems a universal rule to add a paragraph or two warning patients not to be disappointed if they do not see an immediate benefit, the visit may have to be repeated, and the good results may not be felt till a considerable time has elapsed. All this showed such a want of faith in the treatment, such a palpable hedge in case of accident, that I would have been excused had I returned sceptical. My faith was, however, founded on a firmer basis. I had come from a land where the spa is left to make its own reputation and attract patients, no army of medical men to help by their writings or otherwise, no adventitious aid of any kind, no pump-room save the vault of heaven, no tap save the bamboo pipe, no music save the tinkling of the samisen, no casino and no tax.

Up on the wild hillside where the spring bursts forth only a cluster of houses in which to stay, each with its bamboo pipe of supply for bath or drinking. To obtain a course of treatment you had difficulties in the way of getting there, and dis-

comfort and privation while remaining, and yet, unboomed, unadorned, not unhonoured, but unsung, their reputation was made in spite of all, and crowds flocked to them, forming the strongest of all arguments in favour of our first impression, namely, the necessity for their existence. In New Zealand also you see a similar state of matters in the North Island, and the course of events seems everywhere to have been the same: first the spa was found out by the patient and its virtues established, then followed the physician to teach the patient how to use the spa. In certain cases I have a strong impression we must invert this order and read that certain spas have been first taken up and boomed, and then their virtues were discovered. But I am now talking of genuine spas, and it is a comfort to remember that there is a genuine side to the question and a good reason for the faith that is in us. Spas are necessary. Spas have power. In spite of all our chemical knowledge we have failed to imitate them. We may analyse and make a similar solution, but success does not follow. We may boil our water and apply it, but experience holds that the result is not the same. That spas are and have been abused and become in many cases mere hotbeds of quackery is unfortunately but natural under twentieth century conditions, but let us comfort ourselves as we wade through the stream trying to keep our garments as dry as we may, that underneath it all there is a sound bed rock of solid truth in the virtue of the healing waters. It is true that our art has arrived at such a pitch of excellence that spas are no longer necessary in the sense that patients cannot be cured except by them. In fact the very diseases which were the means of discovering the spas' power are now quite manageable by drugs alone, but even in this class of patient some are better treated at the spa, and there are many departures from health due primarily to and continued by a combination of circumstances for which the spa is the short and perhaps the only road to health.

The variety of spas is endless. Weber's classification is practical, and we may rest satisfied with it. We have the strongly marked water of distinctive character, such as the calybeate or sulphurous, purgative or antacid, and the indifferent. We have the water cold, cool, or thermal. The term indifferent is misleading unless we remember that it is

relative, and to distinguish them from the more potent. I have a strong impression in favour of the indifferent thermal, of which Bath is the only example in England. It admits of all kinds of external application. You can obtain any desired temperature without cost or addition ; and for internal use it is applicable to a vast number of cases, either as a simple diluent or on account of its undoubted virtue ; while in the few special cases where you desire a special action you can get that by addition to the water, according to pleasure. No longer one spa one disease, but all may come. In thinking of cases suitable for spa treatment I would first broadly divide all cases into real and ideal. Were therapeutics still in its infancy we could have no difficulty in deciding where a patient should go. Syphilis would be sent here, anæmia there, and so on to the end of the chapter. But spa treatment is no longer necessary in this sense, but real cases must still owe much to spas. When on account of environment or complications they prove intractable at home, such cases must still follow the course adopted by their ancestors and fly to their appropriate spa. Then what shall be said of the army of gouty and rheumatic cases ; of the anæmics, plethorics, and convalescents who are indebted for renewed health to the waters. *Ideal* cases I must again sub-divide into the *pure* ideal and the ideal superadded to a basis of disease. Both of these sub-divisions are best treated at a spa. Let us picture a typical case of, say, functional cardiac disease under treatment at his home, pursuing his daily life, exposed to all its demands with its excitements and worries ; everything tends to aggravate the condition. Drugs are not the only things required. Life cannot be regulated, emotion cannot be controlled, and excitement avoided. Sympathising friends are not an unmixed blessing, and the central nervous system is apt to brood over the vague sensations and intensify them. Send such a patient to a spa, say Nauheim, which has conveniently acquired a reputation in cardiac cases, and the result will be something like this. At once the higher centres are satisfied. They are no longer debating the question : Is my heart affected, and my doctor deceiving me? That point is settled and the dominant thought now becomes, I am to be cured because I am going to the Mecca for heart cases, Nauheim. He arrives full of hope, to

find himself in the congenial society of cases like himself, not gloomy and despondent, but all on the watch for the first sign of improvement, and confident of its coming. Everyone he meets, even landlord and waiter, are loud in their praises of the wonderful spring. He is taken in hand by a physician and willingly carries out all his directions. He has left behind him all his worries. He is seen frequently (three times a day was often the rule during my visit), and after each application of the stethoscope he is assured he is progressing famously. His first short walk takes him to where the frothing champagne-like water sends its jet to heaven, and as it falls back to earth deposits its red rust on the rocks as evidence of its power. He is promised that the time will come when he will be so far improved that he can risk a bath in it. Meanwhile diet, regulated exercise, gymnastics, massage, combined with the cheering exhilaration of hope are doing their work, and the vague pain begins to yield, the flabby muscles begin to recover their tone. Mind regains her power over matter, and the adjustment of the antagonistic nervous influences on the heart becomes daily more correct. He is now promoted to simple brine baths, and certain impressive formalities attend the function. At last the day comes when the crowning act, the bath in the life-giving Stroemsprudel is permitted, and every end-plate and terminal filament of sensory nerve feels the stimulation it expects to feel and conveys it to the brain. You could not convince that patient that it was the sum total of the care bestowed on him acting on a willing and trusting brain that has done the work, and it would be idle to try and explain to him the mysteries of the word suggestion. In cases where there is a basis of disease as cause of the ideal condition, the symptoms being more hopefully watched give renewed courage as they are seen to slowly disappear. A thousand opportunities are given to the wise physician to impress the right direction on the mental attitude of the patient, and the result is the same. At his home the physician's efforts to fill him with hope and courage may be futile; the mere arrival at a renowned spa accomplishes this end at once.

Then there are the various processes, such as douche massage, our strongest weapon for eliminating poisons of all kinds from the system, which require to be done at a natural

thermal spa. With regard to our third class of impressions, it was very noticeable that the most successful spas were those where the treatment was the one dominant feature. Spas such as Aix-la-Chapelle, where you find the spa lost in the centre of a large manufacturing city, are far less flourishing than those of Homburg, Ems or Carlsbad, where nothing is seen or heard which does not directly bear on the reason for the patient being there. The vice of introspection which we must combat in our patients at their homes becomes a virtue at the spa. The difference being that at the spa they are hopefully watching for and confidently expecting the disappearance of their symptoms, whereas at home they watch and dread their increase. The more elaborate the equipment the better. Money is well spent making both the drinking of the water and the bathing attractive. And the multiplicity of pipes and taps is not only useful to allow of the physician adjusting the application to every variety of case, but also has a beneficial effect on the mental attitude of the patient as an evidence of the care taken. Valuable jewels are not kept in shabby cases. Then comes the absolute necessity for amusement to fill in the gaps between the various duties of the day, both for the patient and the accompanying friends, whose dulness would reflect prejudicially on him. Appeals to eye and ear fill up the space unoccupied by our electric batteries in stimulating the exhausted nerve centres. Dulness is fatal, and the pill must not only be sugar-coated but gilded as well if we are to aim at the very best. Beauty of scenery is an important adjunct to cure. Nature has been bountiful to spas such as Ems, Franzensbad, Marienbad, Carlsbad, Aix-les-Bains. She has been lavish in our own case at Bath, and only left to us the duty of taking full advantage of it. In many cases climate steps in to hinder the enjoyment of the beauty, but that is got over by fixing the season to be coincident with the fine weather. For some reason or other we seem to consider Bath an exception to the rule. I certainly see no reason to shut up our spa during the cold weather, but rather to congratulate ourselves that Bath is available all the year round. But I certainly consider that we make a great mistake in not trying to combat the foolish idea that Bath of all spas should be avoided in summer. Relaxing is a word capable of great misuse, and should be

replaced by sedative. Apart from the fact that the relaxing or sedative effect is desirable in many cases, Bath is so situated that the effect can be modified at will by residence at varying levels. Summer is the season when we can most successfully imitate a first-class spa by giving our patients an out-door life, with music and amusements in our lovely parks, and varied walks and drives amid perfect scenery. I well know how difficult it is for the dog with a bad name to behave itself, but I think we should make it or duty to attempt to replace Bath in the list of spas whose advantages can be made use of coincidently with favouring skies and tempered winds. It can never lose its reputation as a shelter from the cold blast; but why neglect it when all nature is on our side and when all similar places are held to be at their best.

To sum up my impressions, I feel convinced spas are of the greatest importance, and as a result of the increased pace at which we live are daily growing in importance. I do not think they are made use of in this country as freely as they should be, and a special impression makes me believe that we who possess the only thermal spring in England are in duty bound to draw attention to its value, and not let it occupy the place of a makeshift when patients cannot do better. We should demonstrate that it is an all the year spa, at its best for many things and certain cases in summer, when full advantage can be taken of its great natural beauty and even of its sedative action.

A CASE OF ACUTE FATTY DEGENERATION OF THE LIVER[1]

By ARTHUR H. LISTER, M.B.,
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THE following case was one of acute fatty degeneration of the liver in a child of six years.

The child was a particularly bright and healthy girl. Her former ailments had consisted in an attack of measles when aged four, and a tendency to constipation, which, when the

[1] Read before the Aberdeen and Kincardine Branch of the British Medical Association, March 1901.

bowels were overlooked for a period, led to slight feverish attacks. These had always yielded to the simplest of treatment.

The father had had a specific history, and had died of general paralysis of the tabetic type some few months previous to his daughter's illness. The mother was a healthy woman, and the patient and her only brother presented no signs whatever of inherited disease.

On November 26th the girl had been at school as usual, and had apparently been in her ordinary health up to that date. On returning from school she said that she had noticed a bad smell when at school and felt sick. She vomited and was given some aperient, which operated. The nausea and occasional vomiting continued however, and I saw her on the evening of November 28th. She was then bright and playful, though her mother said she had been inclined to be drowsy during the day. She complained of no pain but had no appetite and felt rather sick. The temperature was 97° F. The vomiting at intervals continued, and on November 29th and 30th there was slight nose bleeding. I was sent for again on December 1st. The child was drowsier. The temperature in the morning was 96°, pulse 84; in the evening it was 99·5, pulse 104. There was a marked icteric staining of the conjunctiva, but none elsewhere. The pupils were equal and slightly dilated, reacting to light. The knee-jerks could not be made out. There was no rigidity, nor was there any complaint of headache. The abdomen was quite flaccid, the liver dulness came to the costal margin. Heart and lungs normal.

The urine passed on December 2nd was of brownish orange colour, turbid with urates, markedly acid; bile pigment present. A faint cloud of albumen appeared on heating; no sugar. On December 3rd there was a slight action of the bowels of a greyish yellow colour. The liver dulness extended from the sixth rib in right mammary line to about half a finger's breadth below the rib margin. The vomiting or retching had continued, the child falling back in a semi-comatose condition after the exertion.

The pulse in the evening was 107. There was a very marked sweet acetone-like odour in the breath.

On the morning of December 4th she had three fits, the

last of which I saw at about 7.15. It was a severe fit, lasting some twenty seconds, with conjugate deviation to the right.

She remained in a semi-comatose, exhausted condition, with intervals of retching and vomiting during the day. The temperature in the morning was 99·5, pulse 108. A hot water injection, given to allay thirst, was followed by a very foul motion of a grey colour. Examination of the liver showed dulness to a finger's breadth below rib margin, where its edge could be made out.

On December 5th, the ninth day of the illness, I found that a quantity—roughly, a pint or so—of coffee ground vomit with a reddish tinge had been brought up during the night. This evidently contained altered blood. The jaundice on that day was not so marked. The child was quieter, and there was less vomiting during the day. The pulse was very weak in the morning, but in the evening it was somewhat stronger, with a frequency of 103. No alteration was made out in liver dulness; splenic area normal; abdomen resonant to the pubes.

On December 6th she was weaker. The pulse at 3 P.M. was 120, temperature 98·6. She appeared slightly more jaundiced about the eyes.

The urine passed at 1 A.M. in morning had a specific gravity of 1033, was dark in colour, was strongly acid with a thick deposit of urates. Leucin was present in considerable quantity. There was a faint smell of acetone, and there was a characteristic reaction of the same with nitro-prusside of soda and alkalies. Bile pigment was present. The amount of urea was 3·8 per cent., estimated by the hypo-bromite method with Gerrard's apparatus.

On December 7th I found she had brought up a little more altered blood during the night. The pulse was 125, temperature 97° in the morning. There was a frequent movement of the fingers of both hands, rather more than tremor. The smell of acetone, which had been so marked since its first notice up to the 7th, was less marked. The nurse told me in the evening that a yellowish motion had been passed in bed, as well as water, which was not so jaundiced as before. The yellow coloration of the conjunctiva was not so marked as before.

She died quietly next morning on the twelfth day of the disease.

Put briefly the illness was one of some twelve days' duration.

At its commencement it resembled an attack of catarrhal jaundice, except that vomiting was more marked and quite unamenable to treatment and there was more tendency to drowsiness than one usually sees, while at the same time the jaundice was only slight.

There was nose bleeding on the third and fourth day of the disease.

From this time on there was a greater tendency to a comatose condition, the temperature and pulse rose slightly, the former falling again two days before death, the latter roughly showing a gradual rise up to the last day. The highest temperature was 99·5. The epileptiform convulsions on the eighth day and the hæmatemesis on the ninth and following days were marked features of the disease.

In a sentence we had slight jaundice, uncontrollable vomiting, slight pain, hæmorrhages, fits, coma and death in twelve days, accompanied by a slight enlargement of the liver.

It would be of little interest to the Society to recount the unavailing methods of treatment which I used in the case. The alimentary tract was thoroughly cleared in the first instance. The nutrient enemata which the uncontrollable vomiting forced me to order early in the case were seldom retained for any length of time. Occasional warm water injections, which also were absorbed only in part, were of use in relieving the distressing thirst.

In respect of the slight absorption of liquid food I would draw special attention to the remarkably high specific gravity and percentage of urea in the sample examined. The quantity of urine passed averaged a few ounces only in the twenty-four hours during the last few days of illness, but it is impossible for me to make a more accurate statement as an indefinite though not large quantity was passed into the bed.

The acetone-like odour of the breath of the patient was very marked; with a considerable tissue waste it was not surprising that acetone should make its appearance in the urine.

The presence of leucin in considerable quantity—indicated grave trouble in the liver—and its occurrence in the urine as

a deposit of yellowish spheres with irregular projections, was a remarkable fact and one which Professor Macwilliam kindly corroborated.

On examination, *post-mortem*, in which I assisted Dr George Duncan, there was found enlargement of the liver, its lower edge being ¾ inch below the costal margin in the right mammary line. It was in an advanced state of fatty degeneration, indeed fragments of liver floated in water. On section its cut surface was uniformly of a canary yellow colour. The sections stained with osmic acid and with Sudan iii. show well the fatty change, and I would especially draw your attention to the fact that the interlobular tissue shows a definite increase in its connective tissue elements, and there appears to be here and there an invasion of the peripheral parts of the lobules with round cells whose nuclei are stained blue in the coloured section.

Next to the liver, the most striking feature of the autopsy was the occurrence of numerous hæmorrhages. There were small hæmorrhages in the mediastinal fat throughout its substance, in the parietal peritoneum, the largest having an area of a threepenny bit; hæmorrhages were also numerous in the omentum and to a less extent in the mesentery.

There were small hæmorrhages in the mucous membrane of the stomach which were more marked towards the cardiac end; there were a few scattered hæmorrhagic patches about the middle and lower end of the ileum. The Peyer's patches and solitary glands showed no enlargement.

The heart muscle, the kidneys, the pancreas, the spleen, and the brain, except for slight congestion of the pia mater, appeared to be quite healthy.

Round the upper part of the pancreas were five small glands of the size of small beans, but their section showed nothing abnormal. There were some fibrous adhesions between the spleen and diaphragm evidently of long standing.

The history of the illness with such results *post-mortem* points, as I think you will agree, to the probability of its cause being some powerful poison which has entered the alimentary tract and been absorbed by the portal system. The first poison one would think of, capable of such effects, is, of course, phosphorus.

As regards the history, I questioned the mother and the little child herself on my second visit as to the possibility of her having been playing with matches, or of taking any kind of vermin poison. This was answered absolutely in the negative, and I am sorry to say that their answer, taken with the absence of anything noted by the friends in the vomited material, which unfortunately was not kept for me, as regards any particular odour, and the comparatively mild onset of the illness, disarmed any suspicion that I had, and it was only after carefully considering the facts of the *post-mortem* that the definite likelihood of the case being one of phosphorus poisoning impressed itself on me. Examination of a sample of the urine, which I happened to have retained, by Mitscherlich's test—*i.e.* by distilling with a little sulphuric acid in absolute darkness—showed no phosphorescence, nor did the distillate stain a silver nitrate solution. I also stained sections of the liver by Lilienfield and Monti's method with ammonium molybdate and pyrogallic acid with a negative result.

It is, of course, impossible to make a definite diagnosis of phosphorus poisoning with a negative history and without the discovery of phosphorus in the body, and the meagreness of the facts I have to give you in this respect I am extremely conscious of; but it has seemed worth while to bring the case to your notice if only to accentuate the difficulty of diagnosis of such a case without fuller facts, as between phosphorus poisoning and the diagnosis I made provisionally during life, viz., acute yellow atrophy. I may say that Dr Ashley Mackintosh, who kindly came with me to look at the case, was inclined to agree with this latter diagnosis.

The clinical history may be said to be typical of acute yellow atrophy, except that the liver did not shrink and the jaundice was not marked.

Conversely, we may say that the case presents a typical history of phosphorus poisoning, except that the first stage of acute symptoms which we usually associate with phosphorus poisoning were virtually wanting.

I would ask you to consider the first of these two propositions, namely, that the case resembled in its course the type of acute yellow atrophy, except for the absence of shrinkage of the liver and of marked jaundice. Shrinkage of the liver

is apparently the great test, for I think Hunter in Allbutt's System only records cases of the disease where the liver has been found to be normal or enlarged, where there has previously been cirrhotic or other change which had independently led to enlargement of the organ. You may say on looking at sections of this liver that there has been cirrhotic change; and so I believe there has, but it is only slight in amount, and, from the absence of any markedly abnormal increase in the fully formed fibrous tissue, I should take it to be only of recent origin. Again, we may say that if only some of this fat which is so plentiful were absorbed we should have had in all probability considerable shrinkage of the liver, because so many of its cells are so markedly disorganised; it may be so, but we must deal with the liver as it is, and the fat has not been absorbed.

I would call your attention again to the interstitial inflammation inasmuch as it has been taken by some authorities to be to some extent diagnostic, in such cases, of acute yellow atrophy; this argument, however, does not hold good since cases of phosphorus poisoning are recorded in which a similar change has been found.

To add somewhat to the confusion of the matter Hessler, out of sixty-four cases of phosphorus poisoning, found thirteen in which a shrinkage of the liver, indistinguishable from that of acute yellow atrophy, was present.

As regards the jaundice, though usually severe, it may be of slight extent in both diseases.

In respect of the second proposition, namely, that the case presented the type of phosphorus poisoning with the absence of a history of the usual preliminary symptoms, such as burning pain in the throat and abdomen, vomiting of garlicky smelling material, tenderness and distension of the abdomen and the like, we must remember that these symptoms are not invariably present. West records a case where no symptoms were present for six weeks after a patient had swallowed a considerable quantity of phosphorus; the patient then became ill and died in six days.

Stating briefly my object in reading these notes to you, it is to accentuate the possible difficulty of distinguishing the two diseases I have mentioned, in their clinical history and in the

histological characters of the liver. In both diseases we have the clinical symptoms I have indicated. In both we have an active poison which may lead to acute fatty degeneration of the liver cells, with an irritation of the interstitial substance giving rise to connective tissue increase; and while we may hold as most probable, if not indeed as absolutely certain, that there are cases where such a poison, whose nature is unknown, may be developed anew in the body or taken in in some way which we cannot explain, it is well to remember in cases such as this, more especially in young children and among pregnant women of disordered appetite and possibly of mental unsoundness, that preparations of phosphorus are of common occurrence in every household; and it is one's duty to eliminate every possibility of the presence of phosphorus poisoning before we can conclude safely that we are dealing with the extremely rare disease known as acute yellow atrophy of the liver.

NOTE ON A CASE OF PERFORATED GASTRIC ULCER ENDING FATALLY ON THE EIGHTH DAY AFTER OPERATION [1]

By A. A. SCOT SKIRVING, F.R.C.S.Ed.,
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IT may serve a useful purpose to give brief notes of the following unsuccessful case coming under my care during a recent period of surgical charge at Leith Hospital. The patient, a girl of nineteen years, had suffered from symptoms pointing to ulceration of the stomach for over eighteen months. On April 22, she was suddenly seized with pain after taking a little tea, vomited some blood, and fainted. She was seen by Dr Cowan Guthrie of Leith about an hour after the attack, who recognised the condition and advised removal to hospital. When seen two hours after this the symptoms were typical, the most pronounced being epigastric tenderness. Shock, though marked, was not extreme. There was also obliteration of liver dulness to the extent of two inches. Laparotomy by the usual median incision above the umbilicus was done at once, and the anterior

[1] The specimen was shown at the Clinical meeting of the Edinburgh Medico-Chirurgical Society, held on May 15.

aspect of the stomach (which was empty) examined with a negative result. Careful search on the posterior aspect, reached through the lesser omentum, failed also to reveal the perforation. A very small amount (perhaps a teaspoonful or two) of brown-coloured fluid, however, could be seen when the transverse colon was pressed upwards and backwards in order to bring the posterior stomach wall into view. The duodenum was next explored by a transverse incision joining the vertical one at right angles, but again without result.

On a final search being made at the back of the stomach, an air bubble appearing from under a fold in the wall at last disclosed the rupture, which more resembled a spot than a perforation, and was only certainly recognised as such by a small probe slipping into the stomach. Any instrument thicker than a No. 3 catheter could not have been passed into it, so small was the aperture. The site of the ulcer was one and a half inches below the middle of the lower curvature. Closure was effected by invagination of the stomach wall by a double row of Lembert sutures. The *upper* part of the abdominal cavity was flushed out with warm sterilized water for three or four minutes, a large flushing tube being passed behind the stomach, under the liver, etc. No attempt was made to flush out the lower coils of intestine or the pelvis, as there seemed to have been so little escape of gastric contents and the patient had borne the rather lengthy operation badly. A large glass tube was passed under the liver and brought out at the outer corner of the transverse incision and the large wounds closed. The pouch of Douglas was *not* drained.

Considerable shock followed the operation, but the patient seemed to be doing well until the fourth day. On that day, however, signs of peritonitis appeared and pus was found in the tube. Although the girl lived four days longer, little hopes of her recovery were entertained after this date.

The *post-mortem* showed a fairly general peritonitis, with a small deposit of thick pus far back under the liver, and several ounces of a more fluid character in the pouch of Douglas. The stomach showed a perfectly water-tight wound, and the presence of two old cicatrised ulcers close to one another, one large and the other small, *just* below the lesser curvature and on the posterior wall.

Remarks.—Interest in this record, apart from its illustrating the extremely small opening which may be present in these cases, chiefly concerns the peritonitis. What was it due to? Was it preventable? The *post-mortem* seems to negative any further leakage having taken place. Unless therefore sepsis was conveyed at the time of operation (also unlikely), the peritonitis was obviously due either to the presence of escaped gastric contents previous to the operation, or to the retention of some of them after it from insufficient washing out. I fear the latter occurred. The value, or rather the necessity, of thorough washing out in these cases stands nowadays far above question; but how thorough is it to be? To get at every recess really does mean a very considerable additional time on the table and a second incision lower down. Even allowing for the stimulant effect of the hot water, after-shock must be increased.

Are, then, cases where slight extravasation has occurred, *ceteris paribus*, to be as rigorously flushed out as those in which much extravasation has occurred, and an additional drain placed in the pouch of Douglas? One is inclined to fear that cases such as the present one point the way in that direction.

Special Articles

THE ARMY MEDICAL SERVICE

By an Army Medical Officer

AT the present time, when constantly in the medical journals and not infrequently in the lay press the questions in which army medical officers are supposed to be interested are discussed with such ardour, when Royal Commissions have devoted volumes to investigations of how these officers conduct their duties, and when recommendations for re-organisation of the service are not far to seek, perhaps the ideas of one who has served in the army may be acceptable to the readers of *The Scottish Medical and Surgical Journal*, especially if this journal numbers among its readers any who may contemplate entering the service.

"Fools rush in where angels fear to tread," and though

I claim no angelic attributes, I have certainly not "rushed in" to swell the controversy; but, after several years of consideration, have concluded that my experience might be of some interest during such troublous times. My experience has been gained during ten years' service with the army in every branch at home and in India, regulars, militia, and volunteers, and recently as civil surgeon I joined many of my old friends in South Africa. Surely it is no mean advantage to be able to consider the *quæstio vexata* from the standpoints of military medical officer, civil surgeon and civilian. In the last capacity I have been appealed to, and have done my best to assist my medical brethren who still writhe in the bonds of red-tape, and this must be earnest of my good intentions towards them. I have served *with* them in the army, I have spoken *for* them in the perilous times of peace, and I have stood *by* them in war. How better could I have studied them at home and abroad?

A former teacher of mine—and one who still decorates our ranks as a teacher of the Scottish medical youth—used to say, "A public official should always have a grievance. So that when the authorities complain, they can be met by counter complaints." This does not apply so well in military as in civil life, but there is something in it. But this and this alone could not account for the apparent anxiety of the army medical officers to bring their grievances before the public. It is outside the bounds of human possibility ever to get a public department which cannot be improved—such things are not going to happen on this side of the millennium. No concern, however simple, however complicated, can be run in *this* world with entire satisfaction to any single person unless that person has made it and retains entire and absolute control of its arrangements, and in the public services no such person exists. The army medical service is no exception, and no one will deny that its officers had and still have disadvantages and grievances. Let us therefore consider what these are and discuss them seriously and *seriatim*.

First in importance stands the question of *rank and status*. I think these two should be considered separately, though as a rule they are spoken of together. The *status* of a medical officer only exists in his relations with other officers and not with the men, whereas *rank* affects his relations with both. It

always seems to me that the status of a medical officer is pretty much what he makes it. If he be a gentlemen he will always be received and treated as such by the gentlemen with whom he comes in contact; but he must remember that in the army as in civil life "all that glitters is not gold," and he will meet with those whose rank is their only gentlemanly attribute. The heart-burnings caused thereby are of course more common among the younger members of the mess, but being temporary are annoyances to which a gentleman will attach but little importance.

With *rank*, however, it is different. In the officers' mess the rank is more important the more exalted the officer concerned. The lieutenant or captain R.A.M.C. may be styled "doctor" by his associates without any derogation, but it is not right that the youngest subaltern in the mess should use the title "doctor" indiscriminately to a subaltern, captain, major or colonel. Not that this often occurs, for as a rule the senior used to be addressed as "sir" when some such cumbersome title as "brigade-surgeon-lieutenant-colonel" was his proper designation, and his *relative* rank that of lieutenant-colonel. In those days the Queen's Regulations recognised two ranks among army officers, viz., substantive and honorary, and it was certainly invidious that the term "relative rank" should be singled out for medical officers, a "rank" which in official regulations did not exist.

In their relations with the men, however, the necessity for military titles for the medical officers is of much more importance; and here again the younger the soldier, the more likely were difficulties to arise. All the man's life before enlistment, no matter to how low a stratum in society he belonged, he had been accustomed to have his "doctor" at his beck and call, night and day, on payment of a small fee, or for nothing at all. On entering the army, however, the man met with something he had never dreamed of, namely, a commissioned officer. A gentleman surrounded by all the halo of office and glory of importance, whose every word was a command and whose command was law, obedience to which the recruit soon learned to be his primary duty, and infringement of which was a punishable offence. This almighty being could only be approached through the medium of a non-commissioned officer, and then

the attention the recruit received was sharp and to the point. Is it to be wondered at, therefore, that the men classed their "doctor" as different from their "officer"? There can be no doubt that a wise, necessary and just alteration was made when medical officers were granted military titles. It is now as it should be, and in any subsequent "reorganisation" no retrograde step must be taken in this matter.

The second point is that of *pay*. It is beyond question that a surgeon on probation at Netley has to live carefully to make both ends meet. Yet it is undeniable that many do it—probably the majority do it, but certainly one cannot do so and expect to pay one's kit out of any savings. That is the true hardship to the impecunious, and that might well be put right by the War Office paying a bonus of £60 to each probationer who passes successfully out of Netley. If the "kit" be made to include varieties of underclothing and mufti, then I admit that £60 is too little, but for the "kit" itself the suggestion of £100 is unnecessarily high. That is the most trying financial time for an army medical officer, but afterwards I consider that the pay is quite sufficient. It must be remembered that the military messing is excellent, and that its maximum cost is restricted by the Regulations, and that it is really very cheap. Of course, if a medical officer desires to drink expensive wines, to entertain many guests, to play much whist or black pool, to keep a polo pony and such trifles, then his pay will not suffice. But a medical officer who has no private income must have made up his mind before entering the service not to indulge in such luxuries, and he will not be slighted by his moneyed *confrères* because he lives within his income.

It has been said that a medical man is not long in general practice before he is making more than £250 a year. That is so, but it is not the whole comparison. The medical officer has quarters, or an allowance in lieu thereof; he is provided with a servant to whom he pays ten shillings a month, or allowance in lieu thereof, and he can get the servant changed if he does not give satisfaction; he is provided with fire and light, or an allowance in lieu thereof; and he has no expenses for instruments, drugs or dressings; and, finally, the work is so different, "but," as the soldier's poet-laureate says, "that is another story."

Now think of the general practitioner, with his house and rates and taxes, his trap, his servants, his general expenses, and his proportion of bad debts. How many medical men after twenty years' service as general practitioners have saved £12,166 odd, which, invested at 3 per cent., will give them a pound a day, and peace with absolute freedom from all the worries of further practice? Then during his twenty years' service the army medical officer certainly ought to have saved something, so that he will have an assured income of more than a pound a day. I think that this pension after twenty years' service is a great inducement for men to enter the Service, and that so many retire at this period shows that there is something lacking in inducement in the higher ranks of the Medical Service; for if a man likes his work and retains his health he is surely game for a bit longer service than twenty years.

I have referred above to the *work* of the medical officer. One would almost require to consider this under the headings of "during peace" and "during war." As a rule, of course, it is "during peace"; for, though yearly there may be frontier fighting in India or expeditions in Egypt or elsewhere, the great majority of medical officers are engaged in peace work, unless in the rare exception of a big war. Now let us see what the work is during peace. Take Scotland, for example. The depot's hospitals are in many places officered by retired army medicals, *e.g.* Perth, Hamilton, Glencorse, Aberdeen, Stirling, etc.—and this may be taken as some proof of the undermanning of the Service that these stations are not supplied from the Active List. But that is no hardship to the R.A.M.C. In Edinburgh Castle the full complement is one major and two junior medical officers. Now suppose that there was only one medical officer—as I believe has recently been the case—he would have the charge of the hospital of some thirty beds, with an average of fifteen men in hospital—I give a liberal allowance—and these he has to visit night and morning. In Leith Fort there are some fourteen beds, with an average of about four in hospital, and similarly at Piershill. Surely no stretch of imagination could call this work *hard!* He has, of course, other duties, recruiting, inspections, boards, the daily sick, defaulters, and the weekly, monthly, and quar-

terly returns, with the books to keep, and the annual report to write—nearly all of which clerical work is done by the non-commissioned officer, and supervised by the medical officer in charge. Compare that with the work of the general practitioner, who is at it from 9 A.M. till 9 P.M. or later, and has his couple of hundred or more midwifery cases a year, and no certainty of a night in bed at any time. Assuredly it is not the hardness of the work that jars on army medical officers. Not at all. It is this: that the daily routine which occupies only one to three hours a day is irksome unless a man can get frequent short leave, and if the Service is undermanned, as it is, that is difficult to obtain. Then the medical officer has often so little interest in his work. It is hardly worth his while to take much trouble with an interesting case, when at any time the regiment may be changed and he left behind, or he may be changed and his patient left behind. This undermanning of the Service, I have no doubt, interferes with leave on private affairs, but it is quite an exception for it not to be granted—the true complaint is that private leave cannot always be obtained just when it suits the medical officer best. He gets his leave right enough, but he has to wait until the exigencies of the Service can allow him to have it, and obviously this difficulty would exist less if there were more officers. Yet, is such an officer less well off than the civilian who may have to see the whole summer months pass because he has to wait on two or three special confinements? Is this a rare contingency? Much has been written lately of the necessity for "study leave." Surely the very possibility of this necessity shows that the medical officer gets "rusty" because he has not enough to do. It is an excellent idea that *all medical men* should have occasional periodic attendance on a post-graduate course of study, but why the R.A.M.C. officer any more than the general practitioner, especially the country practitioner, who is often much cut off from professional associations? By all means give them study leave, if possible, but such will never make up for lack of experience. A man cannot be a good surgeon without constant practice, and in the home army that is not possible in times of peace.

The report on the Army Medical Services adopted by the Council of the British Medical Association in April of this

year, states:—"Ambitious students are deterred from (entering) the army because they see no encouragement or reward for professional excellence only." With this I entirely agree, and yet as the department cannot create work in peace times it is difficult to see how the objections can be removed in many stations. Still it could be to some extent obviated were medical officers changed less frequently and if they were allowed a freer hand by their seniors. In this connection there occur to my mind many instances of wrong-headed interference of seniors, but I will only give one. When I was at —— Military Hospital in England, a man came under my care with severe syphilis. I found that he was very tolerant of mercury, and I gradually increased his dose until I exceeded the Pharmacopeia's maximum dose. The compounder at once called my senior's attention to the prescription, and I was asked to explain. I pointed out that the man was so tolerant of liq. hydrarg. perchlor. that ordinary doses had no effect on the disease. "That doesn't matter," said my major, "the British Pharmacopeia was drawn up by men who knew much more about medicine than ever you'll know, and you don't exceed their maximum doses in this hospital."

In war the work of the army medical officer is very different from that in peace. Then every man may have to work his hardest irrespective of rest, leave, and indeed of every privilege except that of work. To compensate pecuniarily for the strain put temporarily upon them the medical officers receive additional pay in the shape of "field allowance," and at the end of the campaign "batta," which takes the place of the old "prize money." It is impossible to say what the medical officer's work is during war. Some have a very easy time in every way, others have a very hard time, and this hardness may relate to physical exertion or professional work, or to both.

I do not admit that the army has to meet competition with the navy—few medical men fancy a life spent on board ship—but it certainly has to meet severe competition with the Indian Medical Service. Why? Because in the Indian service there is more opportunity for professional work, professional merit is more recognised, and there is less interference by wrong-headed seniors. Possibly promotion on account of professional merit might help matters in the home army; but

where is the opportunity for professional merit being exercised in a hospital like Leith Fort, with an average of three or four constantly sick? Recognition of professional merit would be very apt to degenerate into wire-pulling by those with influence in order that they might get such berths as the Cambridge Hospital at Aldershot, or Netley, and avoid being thrust into a small station where no professional κυδος is possible. At present the wire-pulling is to obtain sociable or healthy stations, not professional ones. In spite of these objections, however, some recognition of professional merit would be a good thing, and if it were properly carried out, then those who had been house surgeons, assistants, etc., would soon merit their promotion over those who entered the army directly after graduation; and another point is this, that the greater a man's professional merit the less will he "funk" the entrance examination. There must be an entrance examination to determine each man's place, though without doubt it could with advantage be modified.

Unless it were made compulsory for all medical men who are physically fit to serve for a year or so in the army after graduation, and then be transferred to a sort of Reserve, it is difficult to see how a medical establishment large enough to cope with a big war could ever be maintained. The lack of surgical work during peace times must severely handicap medical officers when they are called upon to undertake rapidly a series of surgical cases, a certain proportion of which are sure to come under the category of "major surgery," for want of practice means diminution of that manipulative dexterity which tends so much to the success of many operative procedures. It seems certain that as no great war ever has been, no great war ever will be, conducted without aid from civilian surgeons, who during peace have been doing their 500 to 3000 operations a year. But, on the other hand, these adjuvant medical officers are quite incapable of undertaking the military part of the work. While the junior military medical officers will go forward with the fighting line the majority of the seniors will be employed at administrative work, and the professional part of the work will be done by those who have shown professional capacity, aided by the civilians who stand by to fill

the gaps caused by the general undermanning. There will always be a certain amount of jealousy between these civilians and their military *confrères*, but the more carefully the civilians are chosen the less will it exist. To take a man who has newly graduated, or who has been for a month or two resident in a hospital or assistant to a general practitioner, and place him in the field with a major's pay, as has been done so often in the present Boer campaign, is not a good plan, and must lead to friction. Such junior civilians lack the *status* which age and experience gives, and none are more ready to recognise and respect this status than the military medical officers other than those of the most junior rank.

I feel that this paper, perhaps, may convey to my readers the idea that I do not consider military medical officers fit for all the duties which may devolve upon them in war. Such has not been my intention. I could name several who have had exceptional advantages, and who have profited by them. These men may lack some manual dexterity, but their experience and knowledge more than counterbalance this disadvantage. I could name many who, though competent for all administrative and military work, are quite inferior in professional capabilities, and finally I could name some whose removal from the Service would be for the army's good. Nor is there anything in this which does not find its exact counterpart in civil life.

Whatever similarities or dissimilarities may exist between the army service and civilian life, there is one advantage which the civilian has over his brother in the army, and that is the existence of a settled home life. There is no doubt that the authorities really do something, if not their best, to lessen the frequent changing of married officers, and this has been a cause of complaint from the unmarried, who quickly find that they are "knocked about" more than the married men; and the officers commanding districts, who have the changing in their hands, find that they get more prompt concurrence with their orders from single officers, who have to move themselves only, and not married establishments. Early marriage in the Service is to be in every way condemned. The civilian, on the other hand, can marry earlier, having a fixed abode and establishment in a station of his

own choosing. He has no likelihood of ever having any long separation from his wife, and his children can be brought up under his own eye. He has his friends, his professional or other clubs, his patients, his work, and his pleasures, from which no prospect of a tour of foreign service constantly threatens to remove him. There is no doubt that many men in the Service miss such civilian advantages, and perhaps this makes them the more ready to leave the army on a pound a day.

A very excellent and capable letter has recently appeared in the *British Medical Journal* on the invidious distinctions made in meting out honours to medical officers in the army. It points out that certain high honours are never awarded to medical officers, that they are unrepresented at Court functions though belonging to a Royal Corps, that they have no member on the Generals' staff and so on, and concludes that these are reasons for the unpopularity of the Service. It may be indeed that the existence of such invidious distinctions prevent officers serving as long as they might in the Royal Army Medical Corps, but I do not think that the younger men are deterred thereby from entering—indeed I do not think that the fact that he is ineligible for a K.C.B. ever weighs with a young graduate! It would be the veriest presumption on my part to attempt to put forward any plan for increasing the popularity of the Service, but I feel sure that if decentralisation of authority were to some extent carried out and medical officers allowed to act more on their own responsibility without constant reference to headquarters the work would be more congenial to medical graduates. My ideas on rank, status and pay are set forth above clearly enough, but I would once more emphasise the desirability of making promotion depend more on professional ability than it does just now. One man may be pre-eminent in military hygiene, why put him at a base to look after stores? Another may be above the average in administration, why make him a drudge in ordinary hospital wards? Such anomalies are innumerable. In civil life a man makes work for himself in the line he feels himself most fitted for. Why should it not be so in the army? It is quite out of the question to expect good professional young men to work under some of the officers who have reached the higher ranks of the

Service by systematically shirking responsibility if not by something worse. The better the seniors are in their profession as medical soldiers, the more ready will good men be to work under and with them. Let the seniors be carefully selected and the juniors will improve themselves. Let there be less fuss about their grievances and more writing about their advantages in the press and young men will come forward more readily as candidates for the Royal Army Medical Corps. That the Medical Service has been much improved recently no one can doubt, but the disadvantages under which it laboured so long cannot be removed in a day, and I feel sure that the recent changes will find justification in the popularity of the Service in the course of a few years.

"MUNSHI."

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MR CARNEGIE'S BEQUEST TO EDUCATION IN SCOTLAND

We invite communications on the question: *How can a revenue of several thousands per annum be best applied for the furtherance of Medical Teaching and Research in Scotland?*

NOW that Mr Carnegie's Bequest for the furtherance of higher education has been funded, and trustees of the Fund have been appointed, it has become a matter of urgent importance that the views of the medical profession should be elicited as to the best means of applying the money for the furtherance of medical teaching and research in Scotland.

We have therefore decided to open the pages of this Journal to communications from Professors, Lecturers and Practitioners, dealing with the subject. The communications should be addressed to the Editor, 3 Walker Street, Edinburgh, and may appear under a *nom de plume*, but the name of the writer must be sent along with the paper to the Editor.

The governing body of the School of Medicine of the Royal Colleges, Edinburgh, has printed a statement, a copy of which has come into our hands, which they sent to Mr Carnegie before his completed scheme was published. The statement had for its purpose to draw Mr Carnegie's attention to the place the School occupied in Edinburgh, and that it could not in justice be overlooked in any scheme affecting medical education in Scotland.

We do not think we can do better than reproduce the greater part of this statement:—

HISTORY OF THE SCHOOL.

In the foundation of this School may be traced the earliest attempt to impart scientific instruction in medicine in this country.

In 1505 the Corporation of Surgeon-Barbers in Edinburgh obtained from the Town Council of the City a Deed of Cause by which they acquired the right to have "Anis in the year ane condampnit man efter he be deed to make anatomea quhair thro that they might have experience. Ilk ane to instruct uthers." This deed was ratified by James IV. in 1506.

In 1694 it is recorded that Alexander Monteath, a member of the Corporation of Surgeons, obtained from the Town Council a gift of "those bodies which dye in the Correction House," and of "the bodies of foundlings which dye upon the breast." Three years after, the Corporation of Surgeons completed its hall which contained an anatomical theatre, and in this theatre instruction was given at first by members of the Corporation, and afterwards by teachers and professors appointed by it.

The School grew, and various departments of medical science were taught, certain of the teachers being Fellows of the College of Physicians.

About 1720 Alexander Monro, Professor of Anatomy in the College of Surgeons, was appointed Professor of Anatomy in the University by the Town Council. For three years he conducted his teaching at Surgeons' Hall. In 1725 he was removed to the Town's College. About the same year the other teachers at Surgeons' Hall were appointed Professors of Medicine in the University, and the University were authorised to confer degrees in Medicine.

In giving birth to the Medical Faculty of the University the School at Surgeons' Hall did not cease to exist, and courses of instruction were given throughout the eighteenth century by the Fellows of the Colleges of Physicians and Surgeons.

Early in the nineteenth century several of the Professorships in the University were held by inefficient teachers, and the students, to secure proper instruction, were compelled to pay the fees for the University classes and also to attend the classes at the College of Surgeons. The Extra-Mural School saved the situation; but the number of students naturally fell in an alarming manner, and the Town Council, as Patrons of the University, determined to allow students to take qualifying courses under the teachers of the

Colleges of Physicians and Surgeons. This degree was resisted by the Senatus of the University, who carried the case from the Court of Session to the House of Lords, and it was only in 1847 that the latter body decided in favour of the Town Council. By Ordinance of the Universities Commission of 1858 provision was made by which University students were allowed to take a certain number of the classes with outside teachers, and more recently the University Commission of 1889 considerably extended these privileges.

The Medical School of Edinburgh thus consists of two divisions, the Medical Faculty of the University and the School of Medicine of the Royal Colleges. The growth of the latter is indicated by the following figures:—In 1848 the number of teachers was about twelve; at the present time these teachers number fifty-five, conducting sixty-five different classes. The number of students attending these classes has been systematically ascertained since 1896, and during the last three years the average number per annum has been about 1200. So far as can be ascertained the nationality of these students is at present, roughly, as follows:—

Scottish	32½ per cent.
English	25 „
Colonial and Foreign . .	25 „
Irish	16½ „

Of these students the great majority are qualifying for a University degree, and pay for the various classes the fee determined by the University authorities.

Government of the School.

The School is governed by a Board elected in equal proportions by the Royal College of Physicians, the Royal College of Surgeons and the Teachers, and has a definite Constitution.

Manner in which Teachers are Appointed.

Anyone wishing to teach in the School must apply—if he is a Fellow of one of the Royal Colleges, to his own College; if not a Fellow, to both Colleges—for recognition. A Board is then appointed which examines the candidate as to his proficiency as a teacher, and as to his accommodation and equipment for teaching. If the Board is satisfied, the College or Colleges grant a Diploma.

In order that this course of instruction may qualify for University graduation, the teacher must further apply to the

University Court. This body appoints a Committee of the Medical Faculty to examine his premises and equipment for teaching, and, if the Committee is satisfied, recognition is granted by the Court on the following conditions:—

1st. That the courses of instruction are at least equal in extent to those given in the University.
2nd. That the same fee as that charged in the University is charged by the teacher.
3rd. The annual returns are made to the University Court of the numbers attending the class, and the mode of conducting the class.
4th. That the University Court may at any time, if it sees cause, withdraw the recognition.

Students Attending the School.

These may be divided into four classes:—

I. Men studying for graduation in Edinburgh and other Scottish Universities. According to the present Ordinances, such students may take one-half of their qualifying classes, as well as their entire clinical instruction, with teachers in the School. If the student is proceeding to graduation in Edinburgh, he must matriculate in the University, and pay a class fee not less than that exigible for the corresponding course in the University.

II. Women students studying for graduation in the University of Edinburgh. These receive their instruction from teachers in the School who are appointed by the Scottish Association for the Medical Education of Women, with the approval of the University Court.

III. Those studying for graduation in the English and Irish Universities, or for the Triple Qualification of the Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Faculty of Physicians and Surgeons of Glasgow, or for the licenses granted by English and Irish Corporations.

IV. Dental students, studying for the diplomas granted by the various licensing bodies.

Endowments.

The School does not possess any endowments or funds, and each lecturer has to pay rent of premises, all the cost of furnishings and equipment, and the working expenses of his classes.

In several ways the School has been of great advantage to the University and to Medical Education in Edinburgh:—

1st. By its existence the evil of overcrowding of classes has been obviated, and the importance of this is perhaps best seen in the clinical teaching in the Infirmary.

2nd. Numerous courses on special subjects not taught in the University have been conducted in the School, and the scope of the curriculum has thereby been extended, to the great advantage of the School as a whole.

3rd. The existence of the School has acted as a stimulus to Medical Teaching, and has led in many instances to the introduction of new and improved methods of teaching.

4th. It has retained in connection with the Medical School many of its ablest graduates, and has formed an important training field for professors in this and other Universities.

5th. In this way it has had an important influence in increasing scientific research, and of maintaining the reputation of the Edinburgh School of Medicine.

6th. From the fact that there is no limit to the number of teachers on any particular subject, but that any one who has satisfied the College and the University has the right to teach, the student has the opportunity of selecting his teacher, or in case of taking two courses upon a subject may benefit from the special knowledge of more than one instructor.

We further reproduce below part of the statement submitted to the Universities Commission in 1890 by the Lecturers in the Extra-Mural School of Medicine. This contains an account of the position of the School, and the views held then as to the alterations which it was thought ought to be made in the constitution of the University. As these views are still held by many Lecturers their reproduction here will form a first instalment towards the discussion of a question which affects teachers and taught in our Scottish Schools of Medicine.

History and Position of Extra-Mural School.

The Association of Lecturers in Medicine and Surgery is a portion of the School of Medicine in Edinburgh which claims recognition at the hands of the Commissioners on account of its present position and past history.

1st. It is a powerful teaching body of long standing, having at present fifty lecturers on medical subjects, who are actively engaged in the tuition of students for medical qualifications.

2nd. It passes through the various qualifying classes a large

number of students every session, who thereafter proceed to take the diplomas and qualifications of the various Universities, including the University of London, of the Royal Colleges of Physicians and Surgeons, and of the other Medical and Surgical Licensing Boards.

3rd. It supplies facilities for the study of special non-qualifying subjects, some of which are not elsewhere to be obtained in Edinburgh.

4th. It has formed, and still forms, the best Training School for Professors and Lecturers in the Empire.

5th. It has contributed a large proportion of the original scientific research in the Edinburgh Medical School.

(1) The present number of Lecturers is fifty, of whom thirty-five deliver qualifying courses of instruction of the same duration and scope as those delivered within the University, and fifteen conduct non-qualifying courses on special subjects of interest to Medical Science, but which are not required for graduation.

Each Lecturer on a qualifying subject (excepting Chemistry) must be a Fellow of the Royal College of Physicians or of the Royal College of Surgeons, and is required to pass a special examination before he is licensed as a Lecturer. In Chemistry, the Lecturer need not be a fellow of either College, but he must be examined and licensed by a joint Board of the Royal Colleges. In order to give a course qualifying for graduation, Lecturers must further be recognised by the University Court. In every case, the Lecturers must satisfy the Royal Colleges and the University that they have adequate rooms and appliances for the teaching of their special branches of study.

Several Lecturers may be licensed, and deliver Lectures on the same subject, and at present there are two Lecturers in Anatomy, six in Chemistry, four in Practice of Physic, five in Surgery, five in Midwifery, two in Physiology, etc.

University students attending the qualifying Extra-mural classes must matriculate at the University, and must pay the Lecturer the same fee as is chargeable by the corresponding University Professor. Students may attend four out of fifteen qualifying classes extra-murally, as well as the practical classes of Physiology, Pathology, and Materia Medica.

In all respects the students are taught under regulations similar to those at the University of Edinburgh and the other Universities of Scotland, and they receive similar certificates at the close of each session. Moreover, the University authorities in Edinburgh call upon each qualified Lecturer to supply them at the close of each session with a statement giving the number of students attending the class, the number of lectures or pre-

lections delivered during the session, the class examinations held, and the general mode of conducting the class.

(2) The students who enter the classes of the Extra-mural School are partly University students, proceeding to the University qualification; and partly students who are intending to take other qualifications, such as the qualifications of the Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Faculty of Physicians and Surgeons of Glasgow, the Royal College of Surgeons of England, the University of London, and elsewhere.

(3) The Courses on special non-qualifying subjects are conducted by experts in each branch, such as diseases of the eye, ear, skin, nose, throat, ailments of children, insanity, etc., and have for the last quarter of a century formed a marked feature in this school. Indeed, such medical subjects could be studied in Edinburgh only in the Extra-mural School until lately, when the University of Edinburgh appointed from the Extra-mural School Lecturers on Diseases of the Eye, Insanity, and Diseases of Children, to take charge of classes intra-murally.

(4.) A large number of Professors in Universities have gained their Professorial positions from the experience in lecturing acquired in this School, and on account of the scientific work accomplished by them while Extra-mural Lecturers. At the present moment, out of the twelve Professors in the Faculty of Medicine in the University of Edinburgh, seven—viz., Professors Sir Douglas Maclagan, Grainger Stewart, Crum Brown, Annandale, Chiene, Thomas R. Fraser, and Cossar Ewart—were Lecturers in the Extra-mural School. Similarly Aberdeen, Glasgow, and St Andrews are indebted to the School for Professors in various branches, whilst several teachers have gone to England, notably, Sir Joseph Lister and Dr Matthews Duncan.

(5) It may also be pointed out that a very large proportion of the original research which has proceeded from Edinburgh has been done by Extra-mural Lecturers. In this matter of scientific investigation, the Extra-mural School need not fear comparison with any other teaching body.

For at least a century the Extra-mural School has been an active living power in Medical and Surgical Education in Edinburgh. In fact, the first attempt at surgical teaching was carried out by the Surgeons and before the existence of the University. In 1505 liberty was obtained by the Surgeons to anatomise each year one dead body, "Ilk ane to instruct others," and it was not till 1720 and 1726 that various extra-mural teachers were transferred to the University, and continued their labours intra-murally. Extra-mural teaching was appar-

ently still carried on, for it was flourishing a century ago, and during the last fifty years has been progressively advancing from year to year.

For fully forty years the Extra-mural Lecturers have been associated together. Thirty years ago there were twenty; ten years ago there were forty; and now there are fifty Lecturers. Altogether, during the last thirty years, there have been one hundred and four Lecturers associated within the School. Of these, nine have been promoted to be Professors in the University of Edinburgh; eleven have been appointed Professors elsewhere; five have obtained Lectureships within the University of Edinburgh; twenty-one have ceased lecturing owing mainly to increasing private practice, including three Past-Presidents of the Royal College of Physicians and three Past-Presidents of the Royal College of Surgeons; eight are deceased; and fifty remain as Lecturers in the School, including the present President and two Past-Presidents of the Royal College of Surgeons.

A resolution passed by the Town Council of Edinburgh, then Patrons of the University, and which came into operation in 1855, granted to University Students the power of taking one-third of their classes from Extra-mural Lecturers in Edinburgh; and the Scottish Universities Act of 1858 specifically stated that four of such classes might be taken from Extra-mural Lecturers recognised by the University. This was a decided boon both to students and to the Extra-mural Lecturers.

When a University student joins an Extra-mural Class under this regulation, he still remains a University student. He has matriculated at the University, and when he joins the Extra-mural Class, he states that he is a University student, pays the University fee, and receives a class ticket bearing that it is for University graduation. In fact, to this student, for the time being the Extra-mural Class is a University Class under the Ordinances. But the following disabilities are held by the authorities to attach to the position:—

(1) A student matriculating at the University, and, as a University student under the Ordinances, taking out his classes for the session extra-murally from Lecturers recognised by the University, and paying University fees, is debarred from giving his vote for a Lord Rector on the ground that he has taken his qualifying University classes extra-murally instead of intra-murally.

(2) A student, similarly matriculating, and as a University student taking out University classes from recognised Extra-mural Lecturers, is debarred from his chance of competing for the majority of the University Bursaries and Scholarships.

(3) Students gaining in competition such bursaries and scholarships must, during the years of tenure, attend intra-murally, and not extra-murally, one or more classes, and should they fail to attend the intra-mural class or classes, they thereby cease to obtain and hold such bursaries and scholarships.

These are restrictions on the freedom of the student in taking advantage of opportunities to which under the Ordinances he is entitled, and they tend to throw discredit on the University ticket of an extra-mural teacher.

The intra-mural teachers have enormous advantages in endowments, allowances for assistants, free class-rooms and laboratories, appliances for teaching, museums, etc., while the extra-mural teachers have personally to furnish such at their own expense. With these advantages on the part of the intra-mural teachers, combined with the status of Professors, there would be no reason to consider that the professorial chairs would suffer, even though the whole teaching in the University was thrown completely open without any restrictions being placed on University students as to right of voting for Lord Rector, or as to chances of gaining and holding bursaries, scholarships, etc.

The Association of Lecturers has no endowments, and has made no attempt to obtain such. In 1884, the Lecturers made efforts to become incorporated under Royal Charter as a College entirely devoted to teaching, and the only opposition to their memorial for a charter came from the Senatus of the University of Edinburgh. In view of coming legislation as to the Scottish Universities, the Privy Council resolved to delay entertaining the granting of the Charter, and the Lecturers, recognising the expediency of having their claims thoroughly sifted and adjudicated upon by the Scottish Universities Commission did not press the matter further at the time.

Proposed Alterations in the Constitution of the University.

1. In the following observations and suggestions it is desired to present matters from the point of view of the Edinburgh Extra-mural Lecturers in Medicine, and no attempt is made to consider the extension of the system to other Universities or Faculties. The Extra-mural Lecturers have a close interest in everything that concerns the welfare of the University, because their prosperity chiefly depends on its success. The suggestions, therefore, here made for alterations in the constitution of the University in matters affecting the Medical Faculty have for object, not only to improve the position of Extra-mural Lecturers, but also and chiefly to take

advantage of this opportunity for forming in Edinburgh a great and homogeneous Medical School, such as no other place can produce. That this can be accomplished is due to the fact that all the localities of medical teaching are necessarily situated within a limited area, and that the various medical bodies are intimately associated and in the habit of working together.

2. It may be laid down as an axiom, recognised by all, that the professorships in the University of Edinburgh ought to be maintained of such status and value as to attract the best men in each department of study. It is evident also that in any changes to be made, the utmost care must be taken that no pecuniary or other injustice be done to those who at present occupy chairs. It would not be right to alter for the worse the terms of incumbency of men who were induced to become candidates for professorships on the faith of the permanency of these conditions. But it is also fair to point out that a large increase of emoluments has taken place in recent years in consequence of the growth of the School and of the increase of fees from practical classes and other sources. It is also the case that in the past history of the University, changes in the constitution have been made during incumbency, so that candidates cannot have regarded the conditions of service as immutable.

3. With these precautions the time is opportune for making a large addition both to the staff of teachers and to the staff of examiners in the University, with a view to meeting the requirements of the enormously increased number of medical students. This might be done in various ways, but there are reasons for believing that it would be best effected by strengthening and extending the system which at present exists, and which, although it has no exact analogy elsewhere, has yet shown an elasticity and efficiency which is also unique. It seems of comparatively little importance by what name it is known, extra-mural or other. The principle is that lecturers should be recognised for graduation purposes who have proved to the satisfaction of the University authorities their competence and the possession of adequate apparatus, and that there should be no restriction in the number of teachers, provided they fulfil these conditions.

4. With this object in view, it is suggested—

(*a*) That lecturers shall be recognised as qualifying for graduation throughout the whole curriculum. At present they are recognised to the extent of four out of fifteen specified subjects.

(*b*) That each lecturer, after having acquired experience in teaching for, say, five years, shall become a member of the

Examining Board for the subject which he teaches, and shall be bound to examine gratuitously in the University so long as he may continue a teacher in connection with it. It is not meant thereby and of necessity that the present paid Assessors should be abolished. As introducing methods and ideas from other quarters, the Assessors might still form a constituent of the Examining Boards.

5. The advantages which would accrue from this mode of increasing the teaching and examining power of the University may be put shortly as follows :—

In regard to Teaching.

(*a*) The evils of excessively large classes may thus be reduced. A large class is not always injurious so far as systematic lectures are concerned. To some it may even be a useful stimulus. But many lecturers are quite unable to manage a large class, which in some cases becomes a focus of disorder and an encouragement to inattention. Under competitive conditions the man who can manage it will secure a large attendance. But in every case more personal contact is desirable than can exist under the present plan of professorial assistants. In subjects which must be largely taught by demonstration, such as chemistry, anatomy, physiology, pathology. materia medica, and clinical medicine and surgery, the difficulties connected with large classes are most noteworthy.

(*b*) It gives the student an opportunity of choosing the teacher who best suits him. It is of importance to secure sympathy between teachers and taught. Moreover, in many of the departments of Medicine the range has become so large that men become specially versed, and in a subject which demands two courses, the student has thus an opportunity of receiving the instruction of proficients in different branches of it.

(*c*) It is certain that notwithstanding the greatest care there will be occasionally inefficient and effete professors and teachers. In schools elsewhere much disadvantage has come from the student being obliged to pay a slump sum and attend a certain lecturer on each subject. Even here and under our present system effete teachers have been known; and in the Medical School of Edinburgh, but for an Extra-mural Lecturer, there would at one time have been practically no teaching on an important subject from the age and infirmity of the Professor.

(*d*) To the best teacher, as well as to the worst, competition affords a desirable stimulus. He is constantly on the outlook for new methods of concentrating the attention of his hearers, and perpetually endeavouring to keep himself abreast of the knowledge of the time. In an advancing science this last is a

necessity, and, without competition, is not always to be secured. Lectures have a great tendency to become stereotyped.

(*e*) This method provides for an expansion and contraction in the number of teachers precisely proportioned to the necessities of the school. There is no other way in which the same elasticity can be obtained.

(*f*) It retains in connection with the University its best students, who will thus find the means of perfecting themselves in their chosen study, and of satisfying their laudable ambition.

(*g*) It is the cheapest way in which all these advantages can be secured. While care should be taken that the professorship has secured for it a modest endowment—there is no necessity for making any pecuniary or other provision for lecturers. If their classes fail they simply drop out.

(*h*) It provides an admirable training-ground for future Professors. The value of a teacher becomes known to all in the school, and the probability of success in choosing a Professor is thus greatly increased. Even as at present constituted the Extramural School of Edinburgh has been singularly successful in supplying teachers to all the Universities in Great Britain and the Colonies.

6. These advantages cannot be secured with the same certainty by any other practicable plan for increasing the teaching staff. It is specially important that the staff of clinical teachers should be thus enlarged. The evils of large classes are there at their worst. It has been said that the Edinburgh school must become asphyxiated in its Infirmary. This could be easily avoided by utilising the material at hand. On the medical side there would be no injustice in doing so at once, seeing there is no chair of clinical medicine. On the surgical side it might be done by arrangement with the present Professor, or by altering the conditions of tenure of the chair of clinical surgery with a view to future incumbencies.

Various of the Continental methods approach our own, but fail by comparison in economy and elasticity. Moreover, their Universities, being largely endowed by the State, have been worked chiefly with the view of encouraging research and specialising the subjects of prelection. But in subjects which are compulsory for graduation, the system of open teaching may be perfectly worked without State aid, and indeed is better without it.

It would appear then that in the Faculty of Medicine, in which, as will be seen, the circumstances differ materially from those in the other Faculties, the real question is how far can our present system, which, so far as it goes, has worked well, be safely extended.

Recent Literature

CRITICAL SUMMARIES AND ABSTRACTS

MEDICINE

THE COURSE OF PERITONEAL TUBERCULOSIS AND ITS CURABILITY WITHOUT LAPAROTOMY

By G. LOVELL GULLAND, M.A., B.Sc., M.D., F.R.C.P.Ed.,

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DURING the last two decades the physician has seen much abdominal work slipping from his hands into the ever-ready fingers of the surgeon, and in this process he has assisted with a fine self-abnegation, for it cannot be denied that many lives have been saved or lengthened by surgical measures in such diseases as appendicitis, perforating ulcers, and carcinomata of the alimentary tract. He would be more than human, however, if he did not regret his own helplessness, and if he did not welcome the prospect of retaining at least a few abdominal cases with some prospect of doing them good. Peritoneal tuberculosis is one of the conditions which the surgeons have snatched from us, and the tendency of late years has been to hand over to them more and more cases of the disease. Spencer Wells in 1862 was the first to open a tubercular abdomen, and to see the patient recover as a result of his operation, and since König in 1884 and 1890 published his results, there has been a steady stream of such cases from the medical to the surgical wards. For these reasons physicians owe a debt of gratitude to Dr Ulrich Rose, who within the last few weeks has published a paper with the above title (*Mittheil. aus den Grenzgebiet. der Medizin und Chirurgie*, 1901, Vol. 8, Heft 1 and 2, p. 11), and has endeavoured to show that at least as many, if not more, cases of peritoneal tuberculosis can be cured by medical means as by surgical procedure. He bases his contention on a very minute study of published cases, and on the material from the clinique of Professor Naunyn of Strassburg.

The first question which must be raised in such a discussion is that of diagnosis—are the unoperated and cured cases really tubercular? Here the surgeon has been of great help, for his laparotomies have shown that tubercular peritonitis is almost never absent where it is suspected, and that it is often found

where there was no thought of its presence. There are, however, several forms of chronic general peritonitis and ascites which may give rise to error and which may be shortly mentioned.

(1) The ascites of cirrhosis of the liver, which is not always easily distinguishable. It is to be remembered also that many cases of liver cirrhosis die of a terminal peritoneal tuberculosis.

(2) Peritoneal carcinoma may simulate tuberculosis, especially in those cases where only one tubercular nodule can be felt, which may be easily mistaken for a tumour of the stomach, the gall bladder, or other organ, according to its position.

(3) In children, especially after the infectious fevers, an ascites may develop, which usually terminates favourably. This ascites, however. is sometimes really tubercular, and is of course specially likely to be so in scrofulous children.

(4) In young girls during the process of sexual evolution an ascites may appear, which seems to be associated with changes in the genitalia, and usually disappears when menstruation is established.

(5) Trauma may give rise to a chronic exudative peritonitis, which is not necessarily tubercular, but may be so in cases where an old focus is rekindled by the injury.

(6) Just as tubercular peritonitis is often only part of a general tubercular infection of the serous membranes, so there is a non-tubercular affection of the same kind usually associated with marked perihepatitis, which is variously known as "Zuckergussleber," "proliferative peritonitis," or "chronic fibrous polyserositis." Its cause is unknown, its course extends over many years, and it is so rare a disease as not to be an important cause of fallacy.

(7) There remains only "simple" or "idiopathic" chronic peritonitis, and when the foregoing affections are taken out of this category there seem, from Rose's examination of the literature, to be very few cases of the kind left.

In cases where there is a difficulty in the differential diagnosis, help may be got from injecting the ascitic fluid into the peritoneum of guinea-pigs. A positive result is conclusive, but a negative result, where the animals do not develop tuberculosis, is not so completely satisfactory, for the ascitic fluid in these cases often contains very few bacilli, and these only of low virulence. Injection of tuberculin into the patient may be tried, but is not absolutely free from risk. Ehrlich's diazo-reaction seems likely to be of value, and while in pulmonary tuberculosis its presence means a bad prognosis, the same conclusion cannot be drawn from its occurrence in peritoneal cases, as some of Rose's patients who showed it ultimately recovered. Lastly, in too many of these cases there is tubercle of some

other organ or tissue, of bone, of glands, or of the lungs, and such a complication affords a strong presumption of the tubercular nature of the peritoneal affection.

After examining the published opinions of physicians, Rose considers that they may be summed up as follows :—The great majority believe that tubercular peritonitis treated without laparotomy, though it may show remissions and temporary improvements, is almost always fatal in the long run, and that cures are very rare. The few physicians who take a more favourable view of the prognosis have rarely published their opinions, and have founded them more on general impressions from their own experience than on statistical inquiry. I think this may be taken as a fair expression of the state of medical opinion in this country also, and we need hardly be surprised that the much better results published by many surgeons have led to the belief in laparotomy as a sovereign remedy. At first it was regarded as a specific, and was supposed to act by the illumination, the ventilation, or the drying of the peritoneum, but at the present day it is held to be an adjuvant rather to a spontaneous cure, and to act only by the removal of exudation and improvement of the local circulation.

The first to point out, with a statistical backing, that laparotomy was not essential to cure was Borchgrevink, the Norwegian surgeon (1900). He had forty-four cases, on half of which he operated, while the other half were treated expectantly, or to be fairer, medically. In the surgical half the cures were 64 per cent., in the medical half 82 per cent.—a better result in the unoperated cases! Of the spontaneous cures, 41 per cent. had remained healthy for from one to two years, and a further 27 per cent. for more than two years ; that is to say, 68 per cent. had remained healthy for more than a year. Unfortunately for our opportunities of accurately estimating the value of laparotomy, Borchgrevink is almost the only author who has published parallel series of any size in this way, and it is much to be desired that the *whole* statistics of hospitals were published, both medical and surgical. Moreover, many of the published surgical cures have not been observed after they left hospital with a healed wound, and, in many other cases, a second laparotomy, removal of fluid by aspiration, or medical and general treatment of one kind or another, have been necessary to complete the cure. Another difficulty in the way of comparison is that the surgeon can and does select his cases for operation, and that many surgeons will not operate on cases where, for example, there is or has been diarrhœa, where there is commencing pulmonary phthisis, or other complication, and that these unfavourable cases are handed over to the physician, and help, only too often,

to swell his mortality returns, and to confirm his impression of the fatal character of the disease.

No case should be reported as a definite cure which has not remained healthy for two years; or where this is not attainable, on renewed examination at the end of one to one and a half years no signs of the disease should be discoverable.

If this be demanded, the percentage of cures in the collected surgical statistics sinks very greatly. In König's series of 131 operated cases the "cures" are 65 per cent., but only 24 per cent. of these are of two years or more; in Margarucci's 253 cases the "cures" are 75 per cent., but only 27 per cent. are over one year; Roersch has 70 per cent. of "cures" in 358 cases, but only 15 per cent. of over two years, and so on. Many of the cases which were not observed further may have been cured, of course, but quite a proportionate number seem to have died. The statistics of individual operators come out much better—König, Mikulicz and Rotter have on an average a little over 50 per cent. of cures lasting over two years—but these are generally in selected cases, which would probably have done as well without laparotomy.

Naunyn's material, which Rose describes in great detail, consists of 71 cases, all over 14 years of age. Nine of these died in hospital; 11 cases were discharged greatly improved, but could not be traced further. Of the 60 remaining cases, 4 passed into the hands of the surgeon, and 4 have been discharged—2 temporarily cured—during the last year; but if these be retained, the 56 cases may be tabulated thus:—

Not cured or improved .	3 = 5 per cent.	
Recently cured . . .	2 = 4 „	} 34 per cent.
Permanently cured . . (2 years or more.)	17 = 30 „	} 34 per cent.
Dead	34 = 61 „	

That is to say, roughly, two-thirds have died, one-third is cured; a result at least as good, if not better, than any surgical series of the same size, and, what is of great importance, *not obtained on selected cases but on the whole material.*

As regards the treatment to be followed in these cases, rest and care seem often to be sufficient to induce a spontaneous cure, and when combined with fresh air and good food they form the best remedies for peritoneal tuberculosis. There is no doubt, therefore, that this class of case would derive great benefit from treatment in sanatoria or on similar lines, and some of Rose's cases recovered under these conditions. Sometimes the removal of ascitic fluid by puncture is of importance, but the im-

provement so produced is generally transient, as the exudate often quickly collects again. Diuretics are not of much value, as they are extremely capricious in action in these cases. An exhaustive trial was made of the more important, and calomel (3 grains thrice daily) and theobromin (45 grains daily) were found to be the most useful, though not always successful.

"Antitubercular" drugs, such as creosote and preparations of cinnamic acid, and the methods by which one tries to attack the local inflammation, the application of poultices, iodine, mercurial ointments or soaps, were tried, but are of much less importance than hygienic and dietetic measures. Salt baths, either at spas or taken thrice a week in hospital, or at home, were found distinctly useful.

Tuberculin, if it is used at all, should only be given with great care.

The course and prognosis of the cases show influences from many different sources. The younger patients showed a greater tendency to recovery; there are no cures in this series after 50 years of age. As might be expected, a family history of tuberculosis, and the presence, or previous presence, of tubercle in other organs, are unfavourable. Half of the cases showed one or other: in these the mortality was 76 per cent., the cures 24 per cent. Where nothing of the kind was to be discovered, the mortality was 60 per cent., the cures 40 per cent. By far the most unfavourable of these conditions was pulmonary phthisis; it was present in about half the cases, and in these the mortality was 96 per cent., against 40 per cent. where it was not present.

The peritoneum may, of course, be affected by tubercle in various ways, and many classifications of the forms of the disease have been attempted. A usual one is the division into the three forms — simple exudative (ascites), the dry adhesive, and the ulcerative purulent. Some surgeons believe that all three are equally suitable for operation, others consider that their suitability is in the above order. It is not so easy for the physician to differentiate these forms clinically, as for the surgeon who opens the abdomen. A resistent mass in the abdomen may be either an encapsuled serous, purulent or caseous exudate, a mass of tubercular glands, or a tumour formed by adherent coils of intestine, and it is only exceptionally that one can differentiate them. Rose groups all these cases as the "tumour" form of the disease, and places against them the cases where there was a pure ascites. A third variety is that where an ascites covers and conceals "tumour" masses. From the clinical point of view this is perhaps the best classification, and in any case the exact division does not seem to matter much, as Rose found there was no difference in prognosis

between the three, and, further, there seems reason to believe that one form passes readily into another. Rose further finds that cases with an acute commencement have a better prognosis than those which begin insidiously, but he expressly excludes those cases where the peritoneal tuberculosis was only part of an acute general tuberculosis.

The duration of the disease varied considerably. Most of the fatal cases, however, died within a year of the commencement, and it may be laid down further, as a rule, that if the patient is not cured within from one and a half to two years from the onset, cure is not likely to take place later.

The net result of Rose's work seems to be that we shall have to discriminate more carefully than we have been in the habit of doing between the cases which require operation and those which do not. If a case improves under observation and treatment, if the fever diminishes, the appetite, strength, and general condition improve—and one can safely wait for some time to see if this occurs—one may spare the patient an unnecessary operation. Where, on the other hand, it is possible to diagnose or strongly to suspect a purulent exudate, or a caseo-purulent abscess-cavity, it is our duty not to let the patient's strength diminish too much before handing him over to the surgeon. The diagnosis here is difficult, and the operation often unsuccessful. If it is not performed the patient dies; if it is performed the same result usually follows; but sometimes when the abscess is well encapsuled, recovery does take place. Of course, all cases belong to the surgeon where there are such complications as intestinal obstruction or stenosis, fæcal fistulæ, or tubercular tumours of the female internal generative organs. It is more difficult to decide in the dry fibrinous and fibrinous ascitic forms what should be done. These are the cases which form the great mass of cures by laparotomy, but they seem to heal just as well without it. The question therefore arises, whether in a case which tends to heal, laparotomy has the power of distinctly hastening the process, and, if it has, whether this shortening of the disease is so invariable and so valuable from the point of view of ultimate prognosis, as to outweigh the risks of the operation. This in itself has even in König's hands an essential mortality of 3 per cent., and in less skilled hands, to judge from the statistics of Adossides, a mortality of 10 per cent. This is a point on which we must await further light.

SURGERY

SURGERY OF THE BLOOD-VESSELS

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Suture of Arterial Wounds.—A sufficient number of cases in which large arterial trunks have been sutured is now on record to enable us to form a tentative estimate of the value of this procedure. In a recent paper Veau (1) summarises fifteen cases, and gives a brief resumé of the history of the operation. It appears that Lembert, in 1762, first successfully sutured a large artery. Subsequent attempts were less successful—chiefly on account of septic complications. After the introduction of the antiseptic system however, further attempts were made and the results have been much better. The indication *par excellence* for this procedure is a wound of the vessel wall made accidentally in the course of a surgical operation. In the majority of recorded cases the suture has been employed for wound of the axillary artery occurring in the course of excising malignant glands associated with carcinoma of the breast. The femoral, popliteal, common carotid, external iliac and brachial arteries have also been sutured. Seegel (2) states his opinion that silk sutures are probably more suitable than catgut, on account of their fineness and ease of manipulation. Some recommend that the intima should be included, especially in small and thin-walled arteries, while others advise that only the adventitia and middle coat should be included. There appears to be little risk from bleeding through the stitch wounds, or of the formation of a thrombus, so long as the operation is carried out aseptically. The suture may be either continuous or interrupted, and it is an advantage to stitch a layer of fibrous tissue—part of the sheath or of an adjacent muscle or fascia—over the line of sutures in the vessel wall. Longitudinal wounds lend themselves most readily to this method of treatment, and they have been successfully sutured even when as long as three-quarters of an inch. Oblique or circular wounds are less suitable, especially if more than half the circumference of the vessel is involved. In such cases the vessel may be divided completely across and one end invaginated within the other (Murphy's method). This has been done with success after as much as two inches of the length of the vessel had been removed along with a malignant tumour.

The same methods are available for the treatment of ordinary traumatic wounds. The common carotid, for example, has been sutured for a wound made in an attempt to commit suicide by

cut-throat (Seegel); and the femoral for a gun-shot wound which divided both the artery and vein (Murphy).

In a case of arterio-venous aneurysm of the femoral, Gamaggio sutured the lateral opening in each of the vessels. Ssabanejew reports a case which is probably unique — and which is not likely to be emulated—where he deliberately opened the femoral artery, removed a thrombus which threatened to induce gangrene, and stitched up the opening he had made in the vessel wall. The patient died twenty-nine days after of endocarditis, and it was found that although the lumen of the vessel was conserved the wounds had not united soundly.

It is thus definitely shown that wounds in large arteries may be sutured without serious risk of occluding their lumen, or of secondary hæmorrhage, or aneurysm formation. Suitable cases are, however, comparatively rare.

Treatment of Aneurysms by Sub-cutaneous Injections of Gelatine (3).—Since Lancereaux published, in 1897, the result of the first case in which he had treated an inoperable aneurysm by the sub-cutaneous injection of a solution of gelatine, numerous similar observations have been recorded. This method of treatment is based on the fact that, as Dastre showed in 1895, a solution of gelatine introduced into the circulation increases the coagulability of the blood. The first observations were made by injecting the solution directly into the veins of dogs, but it was subsequently found that the same effect was produced by sub-cutaneous injection. It suggested itself to Lancereaux that this circumstance might be taken advantage of to promote coagulation in the sac of an aneurysm, especially as the rough and irregular lining of the sac also favours clotting. The first patient on whom he tried the treatment had suffered for three years from a large aneurysm of the arch of the aorta, causing great pain. He injected into the sub-cutaneous cellular tissue about 250 cubic centimetres of a solution of 2 grammes of white gelatine in 100 grammes of sterilized normal salt solution, at a temperature of about 37° C. The injections were repeated at intervals varying from two to fifteen days, about twenty injections being sufficient to bring about a cure. The same observer has reported several other equally successful cases of aortic and subclavian aneurysms. In several cases—and this has happened to other observers—the clot which formed subsequently softened and the signs and symptoms of aneurysm were reproduced; but a renewal of the injections re-established the coagulum and a permanent cure resulted. The treatment is best adapted to

sacculated aneurysms—in fusiform dilatations the slowing of the blood flow is not sufficient to permit of coagulation.

Huchard has also had satisfactory results from this method of treatment. He employs a one per cent. solution and allows an interval of from eight to ten days to elapse between the injections. At the same time he administers potassium iodide and carries out the usual general treatment for aneurysm. He points out the danger of embolism—an accident which has occurred in more than one case. Lancereaux admits the risk although he has never met with any untoward complications.

Catfield (4) has recently published the case of a man, aged fifty, who suffered from an aortic aneurysm which caused great pain and dyspnœa. A two per cent. solution was injected into the sub-cutaneous tissue of the abdomen every second day. For the first four injections 3 ozs. were given, and after that 4 ozs. Twenty injections were given in all. Improvement began in a fortnight and was uninterrupted. In about two months he was free from pain, could breathe with comfort and felt stronger. Pulsation could only be felt on deep pressure. He took 15 grains of potassium iodide daily during the treatment, and his diet was restricted, but he was not confined to bed.

In a paper on the treatment of aortic aneurysm by the Moore-Corradi method, Hunner (5) incidentally remarks that the brilliant results reported by the French authors have not been confirmed in the wards of the Johns Hopkins Hospital, although he suggests that the method deserves a further trial.

Treatment of Aortic Aneurysm by the insertion of a permanent wire and galvanism (Moore-Corradi Method).—In a recent issue of the *Bulletin of the Johns Hopkins Hospital*, November 1900, Guy L. Hunner gives an excellent resumé of the literature on this method of treating aneurysms of the aorta, and reports five new cases. Moore in 1864 first suggested and practised the introduction of a coil of fine drawn wire into large aneurysms with a view to promoting the deposit of fibrin in the sac. From the abstracts of the published cases treated by this method, fourteen in number (eight thoracic and six abdominal) we find that only two were cured, and that apparently in four death was hastened. In the remainder the results were either negative or are not definitely stated.

In 1879 Corradi employed the electrolytic action of a galvanic current passed through the wire introduced into the aneurysmal sac. Stewart of Philadelphia has done a great deal to improve the technique of this combined operation, and his success has stimulated various surgeons, especially in America, to employ the procedure.

The operation consists in introducing through the wall of the aneurysm a hollow needle, insulated with vulcanite, as suggested by John Duncan, or with French lacquer, as preferred by Hunner. Through the lumen of this needle from 10 to 20 feet of highly drawn silver alloy wire (75 parts of copper to 1000 parts of silver) is passed into the sac, where it coils up into an open meshwork. The positive pole of a galvanic battery is attached to the wire, while the negative pole is attached to a metal plate and placed over the patient's back. This plate should be well covered with several layers of towel kept moist throughout the operation. A current of 20 ma. is allowed to pass for about an hour. The strength of the current may be gradually increased up to 70 ma. The trocar is then withdrawn, but the wire is left *in situ*. "Never should the sac receive both poles, nor should the current be so passed that the negative electrode is in the sac." The reason for this rule is that, as Duncan long ago pointed out, the clot formed at the negative pole is soft, and liable to break down again.

The dangers incident to this method of treatment are numerous, but the condition for which the operation is undertaken is usually a desperate one, and warrants considerable risks being run if there is a reasonable prospect of benefit accruing.

Hæmorrhage from the puncture in the sac is seldom troublesome, and the loss of a moderate quantity of blood may even be beneficial to many of these patients. Septic infection is a serious risk, and its prevention calls for the greatest possible care. In a considerable proportion of the reported cases the development and rupture of a secondary sac, due to the rapid filling of the main sac by coagulum, and the shunting of the blood stream against a portion of the wall not previously subjected to special strain has occurred. As the wire coils up whenever it enters the sac there is very little risk of the free end perforating the opposite wall. Experience has not shown that embolism is an appreciable risk, even when the free end of the wire enters the lumen of the aorta or lies in a subsidiary sac. Loreta suggests the danger, in abdominal aneurysm, of the sac giving way when the abdomen is opened, and the support of the abdominal walls thus removed.

The results obtained by the combined method of Moore and Corradi are on the whole more favourable than those obtained by the simple introduction of the wire. Twenty-three cases are recorded (17 thoracic and 6 abdominal). Four of these were definitely cured. One patient was alive and well eleven years after operation; another died three years after operation, and the autopsy showed that the cure of the aneurysm was com-

plete. In 9 cases symptoms were ameliorated, and life appeared to be prolonged. In the remaining 10 cases death was probably hastened.

When the effects of other methods of treatment in aortic aneurysm are compared with these, justification may be found for giving this procedure a more extended trial. It is admitted that few spontaneous cures occur, and the Tufnell and iodide methods do not yield brilliant results. Ligature of the aorta, reported in 10 cases, has been universally fatal. Macewen's method of needling the wall of the sac in order to promote the formation of a thrombus yields more satisfactory results, but it is better adapted to aneurysms of the limbs than to those now under consideration.

The Surgical Treatment of Aneurysms by Excision.—Not long ago Professor Annandale, in a valuable paper published in these pages, drew attention to this question, and predicted that ere long this would be recognised as the method of choice in the majority of circumscribed and uncomplicated aneurysms of the limbs. Fowler of Brooklyn (6) reports two fresh cases of femoral aneurysm so treated. Although Professor Annandale's paper is not quoted by this writer, we cannot but be struck by the close correspondence which exists between the opinions of these surgeons.

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GYNECOLOGY AND OBSTETRICS

By J. W. BALLANTYNE, M.D., F.R.C.P.Ed.,
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Early Tubal Pregnancy.—There is still much to be learned regarding the clinical and pathological possibilities of tubal pregnancy in the early months. A. O. Lindfors (*Upsala Läkareförenings Förhandlingar*, Bd. vi. p. 337, April 1901) has gathered together from Swedish medical literature twenty-six cases in which the abdomen was opened for tubal pregnancy which had terminated early. In fifteen of the cases

there had been rupture, in seven tubal abortion, and in four the conditions were indefinite. Six of the patients had died and twenty had recovered. The earliest reported case had been that of Westermark in 1885; it was an instance of tubal abortion, and the mother had recovered. Included in the list were three cases reported by Lindfors himself. The first was an instance of tubal abortion in a thirty year old multipara whose last child had been born twelve years previously. Two swellings, one of which was the size of a hen's egg, and the other much larger, were felt in the right hypogastric region. There had been pains in the abdomen and syncope three weeks before. The diagnosis of extra-uterine pregnancy with bleeding into the pelvis was made, and laparotomy was performed. The two swellings were found to be (1) an enlarged right tube with a gaping abdominal orifice, and (2) an extravasation of blood in the broad ligament and a retro-uterine hæmatocele (*i.e.* both an intra and an extra-peritoneal hæmorrhage). The uterine annexa of the right side were removed, and in the tube the remains of a placenta but no marked decidual formations were found. Neither ovum nor fœtus was discovered. The corpus luteum was situated in the ovary of the *opposite* side of the body. The wound was drained, and recovery followed. Lindfors' second case was one of tubal rupture and presented no special features, save that again the corpus luteum was in the ovary of the opposite side, the ovary on the same side as the pregnant tube being cystic. Also, there was no evident formation of decidual membranes in the tube. The third case was one of incomplete tubal abortion. The patient was twenty-two years of age, and a nullipara, but had already had an abortion. She had been ill for a long time and had been confined to bed with pains in the abdomen and irregular bleeding and fever. Laparotomy was performed. It was found that the left tube and ovary were lying in the pouch of Douglas, adherent to the sigmoid flexure. A tubal mole was projecting from the orifice of the tube. The uterine annexa of both sides were removed, for the right ovary was cystic and the right tube showed salpingitis, while in the left ovary was a dermoid cyst and in the left tube was the tubal mole above referred to. The corpus luteum was again found in the ovary of the opposite side. The abdomen was drained and cure resulted. No decidual formation was found in the tube, but its peritoneal covering was much thickened. Lindfors prefers abdominal to vaginal section in the treatment of these cases.

Closely associated with the question of ectopic pregnancy is that of pelvic hæmatocele. It is sometimes stated that pelvic hæmatoceles do not occur apart from extra-uterine pregnancy.

Paul F. Mundé (*American Journ. Obstet.* vol. xliii. p. 376, March 1901) believes that there are very rare exceptions to this statement, and instances three. In the first there was severe exposure to cold on the fourth day of the menstrual flow, with sudden suppression of menstruation and the development of a tense fluctuating mass in the pouch of Douglas (intra-peritoneal hæmatocele); there was no rise of temperature, and aspiration showed fluid blood; spontaneous absorption occurred. He had examined the case a fortnight previously for sterility and had found nothing in the pouch of Douglas then. The two other cases were examples of large extra-peritoneal hæmatomata following curettage for chronic endometritis, and in neither of them was there the slightest suspicion or indication of pregnancy, intra-uterine or extra-uterine. Possibly the hæmatomata were due to perforation of the uterine wall with the curette and wounding of the pampiniform plexus of veins. Notwithstanding these cases it may be regarded as extremely probable that pelvic hæmatocele means extra-uterine gestation.

Interstitial pregnancy is not truly extra-uterine, for it is a gestation developing in that part of the tube which lies in the uterine wall; but as regards the *cavity* of the uterus it is external. It is rare, probably not more than 1 per cent. of extra-uterine gestations being of the interstitial type; and it is very difficult to diagnose it from pregnancy in a rudimentary uterine cornu, although the position of the round ligament gives an indication which may be of value at the time of operation. It also differs in its course and termination from ordinary tubal pregnancy. It does not, as a rule, rupture till the fourth month, and it may be much later; on account of the greater vascularity of the wall, rupture is more immediately and more often fatal; but it may occasionally rupture into the uterine cavity, and end as an intra-uterine pregnancy. L. J. Ladinski (*American Journ. Obstet.* xliii. p. 303, 1901) reports an instructive case of interstitial pregnancy. The patient was 38 years old, and had had three pregnancies, and a miscarriage two years previously. She had seven weeks' amenorrhœa, followed by irregular bleeding, and two severe hæmorrhages associated with sudden severe abdominal pains, vomiting and fainting. The temperature was 101·6° and the pulse-rate 108. A presumptive diagnosis of ruptured tubal pregnancy was made, but as the tumour felt at the right side of the uterus had some unusual characters, operation was postponed for a few days. Then, as the mass continued to increase in size and the symptoms were aggravated, Ladinski first curetted the uterus, which was enlarged (5 inches), but found its interior empty. He then opened the abdomen. It was discovered that the

pregnancy was interstitial, being situated in the right horn of the uterus; and hæmorrhage was occurring from a rupture in the posterior wall of the sac. With considerable difficulty the gestation sac was excised without removing the uterus; for the tube and ovary on the left side were normal, and it seemed right to attempt to save as much as possible. The vermiform appendix, which was adherent to the gestation sac, was also removed. The patient made a good recovery. Microscopically chorionic villi were found in the sac wall. It is noteworthy in this case that there were two separate ruptures of the sac, with a three weeks' interval, and yet on neither occasion was the hæmorrhage fatal. It is also important to record that the uterus was saved.

Cocaine in Obstetrics.—The value of cocaine in certain departments of surgery is beyond doubt and its use has been clearly delimited; but its usefulness in midwifery practice has not yet been fully established. L. Demelin (*L'Obstétrique*, vi. p. 122, March 1901) refers to its use in the grave vomiting of pregnancy and in painful fissures of the nipple, a means of treatment which is admitted as beneficial by all. He touches upon a much more debatable subject, however, when he comes to consider its value during the progress of labour. The use of applications of cocaine to the cervix uteri in labour dates from 1884. It was applied upon cotton wool in the form of a 5 per cent. solution and it was stated that the pains of labour were in consequence more easily borne, and the confinement was therefore more quickly completed. At first it was employed somewhat indiscriminately, but later its use came to be localised to the period of five or ten minutes preceding the expulsion of the head, and a solution of one to twenty was injected into each labium in the neighbourhood of the fourchette. Neither its earlier mode of employment nor the later one have been widely adopted; indeed their place has been recently taken by the spinal method. In 1900, Doleris reported a case of labour in which anæsthesia was obtained by the lumbar injection of cocaine; and about the same time Bumm and Oskar Kreiss (*Centralblatt. f. Gynäk.* xxiv. p. 724, 1900) reported six cases of a similar kind. It was soon thereafter discovered that in addition to its anæsthetic effect, cocaine when injected into the arachnoid space of the lumbar spine produced an oxytocic action upon the uterus; this was followed by the suggestion that it might be usefully employed in the induction of premature labour. The method of injection does not differ from that employed in surgery. About half a cb. cm. of a 2 per cent. sterilized solution is

injected (after a few drops of cerebro-spinal fluid have been drawn off) into the spinal canal at the level of the fourth lumbar vertebra or well below the conus terminalis of the spinal cord. Complete anæsthesia of the lower half of the body follows, and lasts for an hour and a half or two hours; for an hour and a quarter uterine anæsthesia is complete and the patient feels no uterine pains. It has been proposed to precede the intra-spinal injection by a small intra-dermic one to anæsthetise the skin. There are certain disadvantages, such as cramps in the legs, nausea and vomiting, and severe headache of the migraine type; and it is not altogether free from dangers even if sepsis be entirely guarded against. It is certainly contradicted in cardiac disease and aneurisms, in chronic disease of the respiratory organs, and in diseases of the nervous system and especially in cases of cerebral tumours. It is better not to use it when the hand has to be introduced into the uterine cavity, as in version, for it renders the walls tense and the operation more difficult. On account of its oxytocic effect it is contra-indicated in pregnancy. Gueniot recommends it in the following obstetrical states: (1) in the operations which need an anæsthetic, with the exception of those in which the hand has to be introduced into the uterus; (2) in cases in which pains of labour are excessive; (3) in prolonged labour due to feebleness or irregularity of the contractions; and (4) in all cases where there is a tendency to hæmorrhage, *e.g.* from uterine inertia, placenta prævia, etc. In conclusion, a review of the literature of the subject does not warrant us in concluding that the spinal injection of cocaine is at all likely to take the place of chloroform in midwifery practice.

Meetings of Societies

The Edinburgh Medico-Chirurgical Society

THE ninth meeting of the eightieth session was held on June 5th, Mr A. G. Miller, the President, in the chair.

Dr R. Purves showed a case of musculo-spiral paralysis after operation.

Dr M'Kenzie Johnston showed a boy, aged four and a half years, after removal of laryngeal papilloma, and the forceps employed. The boy had had dyspnœa and almost complete loss of voice, and the glottis was found packed full of papillomatous growths, so that the breathing space was reduced to one-third.

Dr Norman Walker showed :—

1. A case of ringworm which was the first which he had treated by X-Rays. The boy had had the disease for about two years, during most of which time he had been under treatment, always with benefit. The disease, however, after being apparently cured, recurred again and again, and Aldersmith's method of treatment was tried as a last resource, the boy having a presentation to one of the Orphan Schools. The method was apparently successful, and the boy went to school and remained there for some months. The disease, however, again broke out, and as it was limited to a patch about two inches in diameter on the vertex, Dr Walker suggested to his mother that the X-Rays might be tried, explaining the experimental nature of the treatment. The boy was exposed for ten minutes on ten successive days. There was never any sign of reaction, and at the end of this time the hair could be lifted out in handfuls, and in the course of a week was absolutely bald over the exposed area. Antiseptic ointments were applied, and apparently a cure had resulted in about three weeks. He did not suggest that this method of treatment was capable of wide application. Ringworm was so diffuse that the whole head would require to be depilated, and to many this would appear an unduly severe method of treatment. At the same time, where a rapid cure was urgently necessary, as in this case, there was a good deal to be said for the treatment. He had allowed the boy to return to school.

2. Several cases of alopecia areata of special interest.

He had for some time been making a special study of this disease and analysing the cases, bearing in mind the different theories of their development. The cases shown each contributed something of interest, and they supported different theories of the disease.

The first case was that of a man, aged 47, who noticed two years ago that his hair had become white over round patches, scattered irregularly over his scalp. This condition remained without change until six or eight months ago, when patches of typical alopecia areata developed with complete loss of hair; no nerve symptoms. He was a strong, robust man apparently altogether without nerves, but undoubtedly the case would be claimed by those who supported the nerve theory of the disease.

Second, two brothers, one of whom was suffering from his second attack of alopecia areata, the first having occurred five years ago, and having completely recovered from it. The present attack began two years ago and is now complete. His younger brother developed the disease two months ago, and now presents it in a very typical form.

Lastly, a case of complete alopecia areata in a corporal of the

Scots Greys, of exceptionally robust physique. His person was almost entirely denuded of hair, and he had upon the bald scalp enormous *perfectly typical comedones*, along with considerable oily seborrhœa; this case appears to support Saboraud's theory that acne and alopecia areata are closely allied diseases.

Mr Caird read a paper on "Resection of tumours and strictures of the large intestine and ileo-cæcal valve," which will appear in a future number of *The Scottish Medical and Surgical Journal.*

Dr Lewis C. Bruce read a paper on "Clinical and experimental observations upon general paralysis."

He defined general paralysis as a disease marked by progressive degeneration of all the bodily and mental functions, commencing first with those most highly developed and recently acquired, and ending with complete wreckage of mind and body. The course varied greatly, some patients showing mental symptoms, becoming maniacal or melancholic before motor symptoms became prominent, while others presented motor symptoms sometimes for years before any mental peculiarities developed. The typical disease was peculiar in having several stages—the first stage in which the patient was often acutely ill, febrile temperature, loss of body-weight, restlessness, excitement, and sleeplessness being the outstanding symptoms; the second stage, in which the patient became fat, lazy, and liable to congestive seizures; the third stage, in which he again lost weight, became mentally demented, and physically paralysed. The opinion that syphilis, if not the only cause, was certainly one of the chief causes, was at present gaining ground both in this country and abroad.

The following observations were made upon patients suffering from undoubted general paralysis. They were (1) those observations made on patients in whom the disease was steadily progressive; (2) those observations made on patients in a state of remission; (3) those concerned in an attempt to produce remission.

1. *Observations made upon patients in whom the disease was progressive.*—The system which Dr Bruce believed to be invariably affected throughout the whole course of general paralysis was the alimentary system. He had never yet seen a case of early general paralysis in which intestinal and gastric disorders were not met with, obstinate constipation, biliousness, capricious appetite, gastric crises, failure of digestive and assimilative powers. In the second stage bulæmia may be, and generally is, added to the symptoms of the first stage, while in the third and last stage, constipation alternating with diarrhœa is the rule. These symptoms have been commented upon by in-

numerable writers, but their significance has not been appreciated. Dr Bruce thinks no observer has realised that they run from beginning to end of the disease as they are so frequently masked by mental symptoms.

Frequent observations have been made upon the temperature of cases of general paralysis, Savage believing that there is nothing characteristic about the temperature in general paralysis, and Clouston, that the febrile attacks are maniacal temperatures. Dr Bruce has observed the temperatures of cases of general paralysis for several years and has made continuous charts of four to six months' duration. He admits there are some grounds for the diverse statements made regarding the temperatures in this disease. Some few cases though steadily progressive never have a temperature above 98·4 during the first and second stages; in others the temperature is an irregular one, febrile attacks occurring at long intervals. Dr Bruce strongly endorses Macpherson's opinion that the most characteristic temperature in general paralysis is a recurrent febrile attack every one or two weeks. Such recurrent febrile attacks can only be regarded as due to some recurrent cause and that a toxic one. Each febrile attack represents the resistive reaction of the body to some toxic substance, and each inter-febrile period an intermission when the resistive powers of the patient have subdued the action of the toxine. Though many workers have examined the blood in general paralysis the observations are single ones made on different patients, and the results are most irregular. Dr Bruce therefore counted the leucocytes and took the temperatures daily or every second day of some six cases of general paralysis for three or four months continuously, and he found that with every rise of the thermometer there was a corresponding rise of leucocytes. In the first stage the hyperleucocytosis was often very high, sometimes 20,000 to 30,000 per cubic millimetre, and the higher and longer-continued the leucocytosis, the longer was the remission that followed the attack. In the second and early third stage the leucocytes still rose with each rise of temperature, but the reaction was not so vigorous, and between the attacks the leucocytes tended to fall lower than in the first stage. The remissions were also shorter. In the later period of the third stage the leucocytosis resembled the temperature in being very irregular, but did not necessarily coincide with the irregularities of temperature. There were practically no periods of remission. Those progressive cases in which there was no recurrent febrile temperature nevertheless presented every now and then a hyperleucocytosis. These periods of hyperleucocytosis coincided with periods in which there was advance in

the disease, and following upon these periods of hyperleucocytosis there were remissions just as in those cases with distinct febrile symptoms. Each examination of the blood was made at the same hour every day and upon an empty stomach. On one occasion, while examining a fresh specimen of blood from an acute early case, Dr Bruce noticed a motile bacillus; a film specimen stained with methylene blue showing what looked like streptococci. Film specimens were sent to Dr Ford Robertson, who confirmed the observation. This patient developed hæmaturia; an ounce of his urine obtained with antiseptic precautions was centrifugalised, and in the deposit so obtained was found the same motile organism Dr Bruce had first noticed in the blood, but no streptococci. No cultures were made, as before media could be obtained the streptococci and bacilli had disappeared from the blood and urine. This was the only case of general paralysis in which Dr Bruce has actually found living organisms in the blood. He regards it as an accidental occurrence, but thinks it may be an accident which occurs much oftener than is supposed if the condition is looked for. Dr Ford Robertson at this time drew Dr Bruce's attention to the fact that the intestinal mucus in cases of general paralysis swarms with bacteria, chiefly the bacillus coli. The same fact was recorded by Cowan in 1895. As the motile bacillus observed in the blood and urine of the above mentioned acute case of general paralysis resembled the bacillus coli, Dr Bruce tested the blood serum of his general paralytic patients in various conditions of the disease, to see if they had the power of agglutinating bacillus coli. Dr Welsh, Pathologist to the Royal Infirmary of Edinburgh, tested some of the sera; ten progressive cases were tested as to their agglutinative power on bacillus coli in dilutions varying from 1 in 5 to 1 in 20, but no reaction was obtained.

2. *Observations made upon patients in a state of remission.*—Under this heading Dr Bruce refers only to such cases as he had observed to actually improve mentally and physically in the course of the disease, and not to those which merely remained stationary. He found in these cases that the powers of the alimentary system improved. The temperature was never febrile, but the outstanding feature was that the number of leucocytes in the early stage of the remission rose higher than they are in ordinary health, their numbers varying from 9000 to 12,000 per c.mm. of blood. As the remission became fairly established, the leucocytosis gradually fell to that of ordinary health, *i.e.* between 6000 and 8000 per c.mm., when the subject is fasting. The blood serum also of such cases contains some antitoxic substance which is not present in patients in whom the

disease is progressive, nor in the serum of healthy persons. The power of the blood serum to agglutinate bacillus coli in dilutions varying from 1 in 5 to 1 in 20 was tested in ten cases of states of remission and gave definite agglutinative action.

3. *Attempts to produce remission.* — Dr Bruce believes that the majority of cases of general paralysis are due to toxic poisoning, the toxines being bacterial toxines absorbed from the stomach and intestine. Each febrile attack represents the actual entrance of bacteria or bacterial toxines into the blood or tissues, and during periods of remission the blood must possess some antitoxic substance. The truth of this Dr Bruce tested in the following way. A case of general paralysis in the second stage of the disease, during a well-marked remission, had an attack of lumbago. This patient, under antiseptic precautions, was wet-cupped, and the blood so obtained was defibrinated. Two earlier and progressive cases of general paralysis were each subcutaneously injected with 2 c.c. of this defibrinated blood daily for three weeks. Patient No. 1 was in the early first stage, patient No. 2 was in the early period of the second stage. This experimental treatment was conducted nearly two years ago. Patient No 1 became so far recovered that his friends insisted on his discharge and he accordingly left the asylum in February of this year; since his discharge he has supported himself by his own efforts in his trade as a saddler. Patient No 2 has shown physical improvement but no mental change; the progress of the disease, however, has been definitely arrested for nearly two years. Four other cases of general paralysis, contemporaries of these two so-treated patients, are now all dead, and it is a suggestive fact that these two men should have given the reaction they have done to treatment. As it is obviously impossible to continue treatment on these lines, Dr Bruce believes from the fact that the blood of patients in conditions of remission can agglutinate the bacillus coli that small subcutaneous injections of blood serum of a horse immunised to bacillus coli, continued for three or four weeks, may produce artificial remission in the disease, and he is giving this treatment a trial. His conclusions are—

(1) General paralysis is a disease directly due to poisoning by the toxines of bacteria whose point of attack is through the gastric and intestinal mucous membrane.

(2) The poisoning is probably a mixed poisoning, but the bacillus coli is apparently one of the noxious organisms.

(3) The result of treatment with serum taken from a case of general paralysis in a condition of remission and injected subcutaneously into an early progressive case, points strongly

to the fact that some form of serum treatment is the proper treatment for this as yet incurable disease.

The following are the observations made upon the agglutinative power of the blood serum of general paralytics upon the bacillus coli. In every case a twenty-four hours bouillon culture incubated at 98·5° was used. These cultures were made from a stroke culture on gelatine kept at ordinary room temperature. In every observation controls were used. The results were as follows:—

1. The highest dilution in which as a rule agglutination occurred was 1 in 10, and even in this dilution agglutination was sometimes delayed for four or five hours, in one case only was the serum so potent as to agglutinate in a dilution of 1 in 100, but this was only a temporary condition.

2. Out of eighteen control bloods three (16·6 per cent.) produced a very slight degree of agglutination.

3. Agglutinative power was always absent from the serum of those cases in which the disease was progressive, the exception to this rule being that the blood of patients in congestive seizures agglutinates bacillus coli.

4. Agglutinative action was present in seventy per cent. of the serums of patients during periods of remission, and when the remission was of long standing the serum was found in the same patient to vary in agglutinative power from day to day.

5. The agglutinative action was never a complete action, there always being between the clumps motile bacilli apparently unaffected by the serum.

6. A transitory agglutinative power was present in the serum of sixty per cent. of cases which were non-progressive, but which could not be said to be in a state of remission, this transitory agglutinative power being associated with conditions of hyperleucocytosis.

The permanent agglutinative power of the serum of patients in a condition of remission was not necessarily associated with hyperleucocytosis, but is probably due to some antitoxic substance present in the blood. Dr Bruce does not regard this serum reaction as in any way diagnostic of the disease, but merely another link in the chain of evidence that general paralysis is caused by the toxins of intestinal bacteria, and that one of these noxious organisms is the bacillus coli communis.

Dr Ford Robertson read a paper upon "New observations bearing upon the question of the pathogenesis of general paralysis of the insane." He stated that his own studies upon this question, pursued chiefly along the lines of pathological anatomy, led him to conclusions in entire agreement with those formulated by Dr Lewis Bruce. What was still disputed was not the

fact of the toxic origin of the disease, but only the mode in which the toxins act. He explained the grounds upon which he was unable to agree with the conclusions of Mott and Krafft-Ebing, that general paralysis depends upon a premature involution of the cortical nerve-cells, and defended the opinion of Angiolella, that the disease is the result of a chronic toxæmia, which especially damages the vessels of the central nervous system. The accumulated evidence in support of the latter view was now, beyond all question, exceedingly strong. The vessels of the central nervous system had special structural features, which served to explain why they are specially prone to be injured by certain forms of chronic toxæmia. He referred to the numerous observations which show that general paralysis has a remarkable association with various forms of bacterial infection, and that important gastro-intestinal disorders constantly accompany the disease. He then described his own observations upon the condition of the liver and gastro-intestinal tract in a series of cases. In the liver there was constantly evidence of long-standing irritation of the fibrous tissues of the portal spaces. This fact pointed distinctly to the absorption of irritants from the alimentary tract. In all twelve cases systematically examined he found various chronic lesions of either the stomach or intestines. Chief among these were a chronic catarrhal state of the stomach and duodenum and lower part of the ileum, associated with thickening and erosions of the mucous membrane. There was strong evidence that the changes observed were the result of the action of an irritant, which bathed the internal surface. He thought that the view that they were the result of the cerebral condition was quite untenable. Nevertheless, these gastro-intestinal changes were not the cause of general paralysis, but the result of the same toxic action as that which gave rise to the other lesions in various parts of the body. When all the facts that had been ascertained were taken into account two conclusions seemed to him to be justified, namely, (1) that the toxæmia of general paralysis is of gastro-intestinal origin, and (2) that the toxins are mainly bacterial. There was evidently a partial breakdown of those forces by which any harmful development of the intestinal organisms was normally prevented. He discussed the question of how the inhibition of the growth of these bacteria is normally effected, and insisted that the phenomenon could only be explained as essentially the result of the same forces as those by which the growth of bacteria is prevented in the living tissues, namely, by the action of leucocytes, alexins and anti-toxins. There was conclusive evidence that in the general paralytic, even at an early stage of his disease, there was a weakening of the natural resistance to bacteria, or of the

natural immunity. Such weakened power of resistance would manifest itself specially in the alimentary tract in which the inhibitory substances were in a state of comparative dilution. There would be an increased growth of bacteria and an excessive formation of their toxins. A catarrhal state of the gastro-intestinal tract would be set up, which was really the expression of a local effort on the part of the human organism to hold the bacteria in check. Any sudden excessive formation and absorption of toxines caused a rise of temperature, general and local leucocytosis, a pouring out of leucocytes and alexins into the alimentary tract, a formation of specific anti-toxins and arrest of the further growth of bacteria. The specific anti-toxins would for a time specially serve to inhibit the development of those forms that chiefly threatened their host. When the specific anti-toxins became exhausted, these same bacterial forms might again become aggressive and the whole process would then be repeated. Corresponding to these alternate waves of toxic action and tissue reaction, there were the clinical phenomena of alternate exacerbation and remission of the more active manifestations of the disease. When the toxins were absorbed in quantities too great to be destroyed or rapidly excreted, they affected the nutrition of certain of the tissues. The vessels of the central nervous system were specially sensitive to these bacterial toxins, and for the reason explained the capillaries suffered in the same manner as the arteries. The toxæmia was probably in some measure established for months, or even years, before the first symptoms of nervous disease manifested themselves. In some individuals the cerebral vessels gave way earliest and general paralysis was the result; in others the vessels of the cord were the more vulnerable, those that received the largest quantity of blood, and therefore of toxin, suffered first and most severely, and the clinical and pathological picture of tabes dorsalis developed. He advanced the hypothesis, against which he knew many as yet unanswerable arguments could easily be brought, that the alteration in the general immunity was dependent upon commencing exhaustion of the leuco-blastic function of the bone marrow. He pointed out how this hypothesis would explain certain very contradictory facts regarding general paralysis and tabes. The factors which were known to favour the development of these two diseases were for the most part such as caused prolonged leucocytosis.

Dr Clouston said that he felt sure these papers were epoch-making pieces of work, but thought Dr Ford Robertson had scarcely done justice when he insisted on the vascular origin of the disease. He accepted the toxæmic theory, but, from the

clinical point of view, he considered the disease begins in the highest centres of the brain, and that from these there was a progressive degeneration downwards, involving all tissues, and including arteries and capillaries—all secondary to the disease in the neuron. He admitted this was not yet settled, but it was consistent with the toxæmic theory.

Dr Macpherson wished to homologate what Dr Clouston had said, and thought Dr Bruce's paper was perhaps the most important paper read for years. He was glad that Dr Bruce had emphasised the fact that general paralysis was a fever, and said that was one reason in support of the toxæmic theory. Another point was that general paralysis was a degeneration of all the tissues of the body.

With regard to Dr Clouston's views on the nervous origin he thought the day had gone by when that could be accepted. With regard to Dr Ford Robertson's views on the relation of syphilis, he thought the syphilitic and toxæmic theories ran parallel without destroying one another; but with regard to Mott's experiments to show that choline was the cause of the nerve degeneration, it was too much to be asked to accept the statement that the nervous system manufactured choline for its own destruction. The bacillus coli was so common and ubiquitous that there was a revulsion of feeling to consider this the microbe.

Dr Byrom Bramwell agreed with Dr Macpherson in regard to the syphilitic element in the causation of tabes and of general paralysis. Some irritant or strain must, however, be added, but there was no reason to suppose that general paralysis was due to any *particular* irritation superadded to syphilis—any irritant was sufficient. He asked why these irritants did not act in people who were not syphilitic, and said this point in Dr Ford Robertson's paper would need explanation. He agreed with Dr Clouston that there was nothing to show that the action was not primarily on the nervous elements, and it was impossible otherwise to explain the primary symptoms. There was no reason to suppose that certain vessels were picked out, but there was a special nerve element picked out.

Dr James Ritchie thought the most hopeful point was that the antitoxin arrests the disease, and in this connection he recalled the fact that general paralytics often get well without treatment. It was extraordinary that, if the cause was a microbe, it attacked a man when he was most, and not least, resistant.

Dr Gulland criticised the papers adversely.

Dr Bruce, in replying, said—There is, I believe, too much made of the question, Does the disease start in the nerve cells

first or in the blood-vessels supplying these cells? If we are agreed as to the cause of general paralysis, that it is a toxin, then it matters little whether that toxin attacks the vessels first or the cells first, and our energies should be directed to the production of an antitoxin.

Dr Gulland scoffs at the suggestion that the leucocyte producing power of the bone marrow becomes exhausted, pointing to the chart as contradicting such a theory. The specimens of bone marrow shown by Dr Ford Robertson to-night present grave degenerative changes. And I have found in the last stages of general paralysis that any condition which produces a hyperleucocytosis produces rapid exhaustion and death.

Dr Gulland also objects to the fact that bacteria were present in the blood and secretions, and he points out that I failed to sterilize the sweat glands. The blood in both cases swarmed with organisms immediately after removal from the body, and certainly these organisms did not come from the sweat ducts.

I do not know what value, if any, is to be attached to the power of the blood in certain cases of general paralysis to agglutinate B. Coli. It certainly occurs more frequently in the blood of general paralytics than in the blood of healthy persons, and I regard it merely as another link in the evidence that general paralysis is a disease of bacterial origin.

Dr James Ritchie thinks that two cases are too small a number to base any results upon. I refer to the two cases treated with serum. In this country we do not regard experimental treatment with favour, and I do not think one would be justified in making a routine practice of utilising one patient as a serum producer for another.

Dr Robertson said that the course the discussion had taken had made him realise very fully how greatly the case that Dr Bruce and he had endeavoured to lay before them had suffered on account of the lantern slides not having been shown. He was certain especially that the vascular changes could not have been made light of in the way that had been done if the speakers had seen the photographs of platinum and palladium-methyl violet preparations of general paralytics' brains that he had brought for the purpose of showing to the meeting. For his own part he had no preconceived objection to admitting that in general paralysis, as unquestionably was the case in many other nervous diseases of toxic origin, the toxins acted merely directly upon the nerve-cells. He was, however, only concerned with the facts, and histological investigation, he maintained, proved conclusively that the vascular changes in general paralysis were the result of toxæmia, and that the essential neuronic lesions were chiefly secondary to these vascular changes. The theory

of leucoblastic insufficiency was not his main position, but a mere hypothesis against which, as he had said, many unanswerable arguments could easily be brought. The fact that it had not been proved that there was any diminution in the number of leucocytes in general paralysis did not contradict this hypothesis. If the insufficiency did exist, it was qualitative rather than quantitative. It meant that the leucocytes were unable to form the normal amount of alexins and to take their full part in the formation of antitoxins. Indeed, nature generally endeavoured to balance such qualitative diminution by quantitative increase. With regard to the assertion that the changes present in the specimens of stomach and intestines shown to the meeting were merely such as were commonly to be found in any person who had died after a long illness, he denied it absolutely. He was specially interested in Dr Russell's statements, that he had frequently observed in aged people slight febrile attacks similar to those described by Dr Bruce in cases of general paralysis, and that those attacks were likewise evidently of gastro-intestinal origin. These aged people always had arterio-sclerosis, and he maintained that this morbid condition was mainly the result of a toxæmia which was primarily of gastro-intestinal and bacterial origin. In general paralysis the toxæmia was chronic with frequent exacerbations; in ordinary arterio-sclerosis it was only occasional. He fully recognised that there were many cerebral conditions which favoured the development and determined the localisation of the morbid process in general paralysis. Among these overwork was undoubtedly one of importance, as was also traumatism; but neither overwork nor traumatism were essential causes of general paralysis, and even when they appeared to be important factors in a case, it was logical to infer that there were other causes also in operation. Dr Ritchie had expressed the opinion that little importance was to be attached to the two cases referred to by Dr Bruce, in which apparently a remission had been induced by injection of serum obtained from a case in a later stage of the disease. The same experiment had, however, been carried out quite independently by D'Abundo, with the same result.

Edinburgh Obstetrical Society

THE seventh ordinary meeting of this Society was held on the 12th June; Dr R. Milne Murray, President, in the chair.

Exhibition of Specimens.—Dr Berry Hart exhibited (1) a large fibroid tumour removed by panhysterectomy. The uterus was as large as an eighth month pregnancy, and the operation

was necessary owing to its bulk and the fact of persistent metrorrhagia. On section the uterine cavity was large and sigmoid in shape. (2) An incomplete tubal abortion. The gestation sac itself (2 inches by 1½ inches) was attached by its one pole within the fimbriated end of the tube, the other half projecting beyond the tubal end. The part in the tube was adherent to the tube wall in more than half its extent. The amniotic cavity was well seen, and the sac wall, averaging ½ to ⅞ inch on section, had a good deal of blood extravasation in it. It was impossible to settle until a microscopical examination had been made whether this was really an incomplete tubal abortion or a tubal gestation partially developed in the fimbriated end of the tube. (3) A parovarian tumour with a markedly twisted pedicle. The ovary could be seen at one part of the tumour. There were general adhesions to bowel and mesentery. (4) A ruptured ovarian cyst from a girl aged 14. This patient was in the ward waiting for operation when the cyst burst at 3 A.M. It was removed twelve hours afterwards. The perforation could be seen as also a second incomplete one showing the peritoneal coat lacerated, but not the deeper part of the wall. (5) A large papillomatous cyst, one of two specimens of the same size removed from the one patient. The papillomatous growths were on the surface of the tumour. The general peritoneun was unaffected, and Dr Hart removed them without tapping through a large incision. (6) Part of a large semi-solid ovarian tumour with myxomatous and cystic parts, the latter lined by columnar epithelium. There was a large amount of ascitic fluid. Dr Hart also showed a drawing of the tubal abortion, and for comparison a drawing of a peritoneal tubal rupture from a fine specimen in Dr Harvey Littlejohn's museum.

Dr R. C. Buist, of Dundee, exhibited a uterus with deciduoma malignum after a hydatid mole (with microscopic sections) from a woman aged 42.

Dr Haig Ferguson showed a myomatous uterus which presented unusual relationships, removed by abdominal hysterectomy. The tumour occurred in a woman aged 55 and had no pelvic relationships, the cervix uteri being high up and out of the reach of the finger. There was a large tumour in the left side in the region of the spleen, and feeling like it, being notched. On the right side a tumour was also felt, and there was a resonant note on percussion over the tumour.

Dr Simpson showed an epithelioma of the clitoris from a married woman aged 32. There was no glandular enlargement.

Dr M'Vie, of Chirnside, showed two drawings illustrating *varix gestationis.*

Dr H. Oliphant Nicholson read an interesting paper on "Eclampsia and the Thyroid Gland." This paper appeared in full in last month's issue of this journal. The discussion was full, and amongst those who took part in it perhaps the most noteworthy were the following:—

Dr Underhill remarked that if thyroid deficiency were so common why was it that eclampsia was so rare, perhaps only one in 500 cases? Nor did Dr Nicholson's theory explain the enormous proportion of primiparæ who were the subjects of eclampsia. Of 28 cases of this affection which had occurred in the Maternity Hospital of Edinburgh during the past five years, 25 were primiparæ and only 3 multiparæ; of these 15 recovered and 33 died, and all the multiparæ were saved. The great mortality amongst such cases might be due to the fact that they were only brought to the hospital at a late stage of the disease. His own view was that the disease was due to the tense abdominal walls causing pressure on the kidneys and ureters. The dense œdema which the author had described was seen in women both with or without albumin, and it very often disappeared with great rapidity after parturition. In such cases one noted the excessive amounts of urine which were passed within the first few days after delivery—60 to 100 oz. daily. He did not think that those patients with the dense œdema were so likely to take eclampsia as those with the soft œdema. Dr Lawson Tait had twenty-six years ago read a paper to this Society on the enlargement of the thyroid gland during pregnancy. In this he had noted that the gland might be so large as to endanger the life from suffocation; yet after delivery it rapidly fell in size. All such women had profuse hæmorrhage during their labour and menorrhagia afterwards.

Dr Berry Hart said we know so little about eclampsia that there was free scope for the propounding of any theory. He had already drawn attention to the marked action which the thyroid had on the connective tissue of the body. There had been two myxœdematous women who had borne children, and yet had no eclampsia, and these cases seemed to him a strong argument against Dr Nicholson's theory. These women actually improved in condition during their pregnancy, doubtless due to the action of the fœtal thyroid. Dr Hart narrated experiments made on bitches in removing the thyroid while they were pregnant. In eclampsia there is a real affection of the kidneys (catarrhal nephritis) and not merely a spasm of the vessels. There are also other definite changes as infarcts in the liver, which are not accounted for by the thyroid theory. The number of cases of eclampsia narrated by Dr Nicholson was too few to make any generalisations upon. Then the morphia

and milk diet effected good, but he was very doubtful whether the thyroid had any action on eclampsia. The actual cause of eclampsia was unknown. Perhaps it might be some irritant which acted on the cerebral centres and on the kidneys. It had been thought to be due to a fibrin ferment which might cause a clotting of the blood.

Dr William Russell stated that he was much interested as a physician in the thyroid and its functions. Eclampsia must be due to some poison produced by inefficient metabolism or imperfect excretion. He had seen cases of thyroid insufficiency, and this might act only temporarily. One would naturally expect to find such cases more frequently in primiparæ on account of the greater strain on their economy.

Dr F. W. N. Haultain said that the paper raised many debatable points, but the crux of the whole seemed to him to lie in the increased arterial tension. The probable exciting cause in eclampsia is some toxine causing increased arterial tension. We may therefore find that iodothyrin is valuable in the same way as nitrates by counteracting the effect of these toxines and dilating the vessels. It should be given a fair trial, as it might be an extremely valuable drug. The œdema which is present without any indication of eclampsia may be due to deficient kidney action without any toxines being in the blood. The whole point of the paper lay in the antidotal action of thyroid extract on arterial spasm.

Dr J. W. Ballantyne stated that the last case of eclampsia narrated by Dr Nicholson was under his own care. The patient did well under morphia, and passed a fair amount of urine. Next evening, however, the fits returned, and morphia was again given. Only after the third fit was thyroid extract administered, and there were no subsequent seizures. The œdema which was present disappeared with great rapidity. Not more than three doses of thyroid had been given to this patient. It was a very difficult matter to decide whether a thyroid were enlarged or not. In the Edinburgh Maternity Hospital the number of cases of eclampsia was out of all proportion to what it was in other centres. Of 3700 cases treated in the Rotunda at Dublin, there were only six mild cases of eclampsia, and of these only one died. Dr Ballantyne did not see how the fœtus could supplement its mother's thyroid action, for in the normal fœtus there is no iodine in its composition, and it is to this element that Dr Nicholson ascribes the potency of thyroid extract.

Dr M'Vie of Chirnside thought that multiparæ should furnish most cases of eclampsia, as in them the thyroid would be most likely to fail in its function. It mattered little what drug were employed so that the blood pressure was lowered and elimina-

tion favoured. In his own practice he had had ten cases of eclampsia (only one being a multipara), with only one death, and this not due to eclampsia. All but one were primiparæ, and all recovered. No rules such as had been given could be laid down unless a much larger number of cases were investigated. As regards the undue proportion of eclamptic cases in Edinburgh, one must remember the topographical influences bearing on disease. In Berwickshire struma and caries were unknown. He did not know of a case of excision of a joint for either of these in the county.

Dr James Ritchie said that any drug which raised the blood pressure was bad in eclampsia. Thyroid extract increases the urinary secretion in a remarkable way while lowering the blood pressure. Morphia lowers the blood pressure but lessens the flow of urine.

In his reply Dr Nicholson said that the parathyroid glands had just as important a function as the thyroid itself. In primiparæ the toxines might be more powerful and the pressure on the renal vessels by the abdominal walls had also to be superadded. Multiparæ, on the other hand, might acquire some degree of immunity to the toxines. The dense œdema which he referred to lasted for a very long time in the fingers, but disappeared very rapidly when thyroid extract was given. With reference to myœdematous women bearing children, the mother might utilise the fœtal secretion and her parathyroidms might be acting perfectly well.

New Books and New Editions

A Handbook of Materia Medica, Pharmacy and Therapeutics. By SAMUEL O. L. POTTER, A.M., M.D., M.R.C.P. Lond., formerly Professor of the Principles and Practice of Medicine in the Cooper Medical College of San Francisco. Eighth edition, revised and enlarged. Pp. 950. London: Rebman Limited. 1901. Price 21s. net.

IN the preface to the first edition of this book the author tells us his "intention has been to produce a book which would embrace in a single volume the essentials of practical materia medica and therapeutics, treating of each subject in as concise phraseology as possible consistent with the delineation of every important feature." And he trusts that it will "take rank as a working companion to the advanced student and the junior practitioner, and be deemed by them a reliable guide through

the forest of observations and experiments on drug action and uses, which make progress slow for the already over-burdened mind, when ploughing through the more exhaustive and exhausting text-books." The book, he acknowledges, "is essentially a compilation, as all books of its class must be," but "there will be found in its pages much original matter derived from the writer's own experience in professional life. The arrangement of the matter will be found to be in some respects unique. After full consideration of the many arrangements of the materia medica in vogue, a modified alphabetical plan was adopted, by which the advantages of the alphabetical order might be retained, while permitting the grouping together of agents which are closely related, physiologically and therapeutically, under the title of the principal member of the class—the chief, as it were, of that particular class." These are the aims, aspirations and plans of the author. As regards the second we think he has failed. To us, the book is more like a modified dispensatory than a text-book—a "working companion"—for notwithstanding "the grouping together of agents which are closely related," the book has no connected plan. It is also obviously a compilation, and a compilation not from original sources, but from text-books of more or less recent date. As a consequence, notwithstanding the revision it still promulgates ancient theories and retains old statements which would be better discarded.

In plan the book is divided into four parts. There is an introduction (pp. 17-74) containing definitions and the classification, administration and dosage of medicines, which in our opinion is the worst feature of the book. It abounds in mistakes, misleading statements and badly expressed ideas. Pyroxylin (gun cotton), we are told, is obtained by the action of strong acids or alkalies on cotton; pilocarpine is said to paralyse accommodation and to be an anhidrotic; atropine, to dilate the pupil mainly it would seem by stimulating the terminations of the sympathetic nerve in the iris; muscarine to be both a mydriatic and a myotic, no indication being given as to which it is first or foremost. Without some explanation tables such as are given are absolutely useless; with explanations they are not of much value. Under "Antagonist" the author gives, as a typical example, poisoning by digitalis, and he tells us that "saponin and senegin are the most complete antagonists against digitalis, their action extending throughout nearly its entire range of action." We may be mistaken, but we think this statement rests upon very old experiments made on the isolated frog's heart, and even as regards this organ the statement is not quite true. Applied to man it is worse than

untrue: it is dangerous. Antiseptics, again, are classified into strong, moderate and feeble. Under strong, we find alum and tannin; under moderate, quinine and mercuric iodide; under feeble, "alcohol (pure)." One class of medicines according to the author is "ciliary excitants," which "are substances which, when dissolved in the mouth, promote the expectoration of bronchial mucus by their reflex excitation of the tracheal and bronchial cilia," *e.g.* chlorides of ammonium and sodium. But sufficient has been said to indicate the character of this portion of the book.

Part I. (pp. 75-530) consists of the materia medica, physiological action and therapeutic uses of individual drugs, official and unofficial, ranging from Abrus (jequerity) to Zingiber. It closes with a recipe for making ginger-beer. The materia medica is sound and contains all a practitioner need know on the subject; the physiological action is weak and old-fashioned but the more important practical points are given; the therapeutic uses are dealt with fairly fully, but here again there are many antiquated statements. The most valuable portion of this part is the description of new remedies and little known or used drugs. The second part (pp. 531-632) consists of pharmacy and prescription writing, and is, in our opinion, the best part of the book. We have not seen anything new—except a tirade against druggists—but it contains sufficient information on pharmaceutical chemistry and dispensing to enable men to avoid the pitfalls of prescription writing. And it is given in a simple form. The statement that potassium bromide precipitates strychnine from strychnine sulphate needs, however, some explanation.

The third part (pp. 603-882), is purely therapeutical. It enumerates, rarely discriminates between, the drugs which have been used in various diseases and pathological conditions. It is almost wholly a compilation. The diseases are arranged in alphabetical order, commencing with Abasia and Astasia, followed by Abdominal plethora, Abortion, Abscess, Acidity, Acne, etc., and ending with Yellow fever. As an example, because one of the shortest, we give Addison's disease. "Arsenic, with cod-liver oil, gives the best results (Da Costa). Iron and other tonics are useful, especially a combination of the chloride, glycerin and chloroform (Greenhow). Phosphorus has seemed to exert a beneficial influence (Wilks). Adrenal extract has been employed in a few cases with some benefit while used (see page 165). Treatment must be symptomatic, and is of little use, the disease being always fatal (Hamilton)."

"The appendix contains numerous tables, comprising diagnostic hints, Latin terms and phrases, formulæ for hypodermic

use, metric equivalents and specific gravities and volumes; also formulæ representing the most noted patent medicines."

Notwithstanding this mass of information we feel unable to recommend the book. It might prove of use to those who wish to acquire some knowledge of the newer remedies, but for students and practitioners who seek a guide to the action of drugs, or even to treatment, it is of comparatively little value. The objections to its use are further enhanced by the fact that it is only adapted to the American Pharmacopœia. But that it fulfils a want in the Far West is evident from this being the eighth edition, which the author says has been largely rewritten and expanded by the introduction of much new matter. The latter includes paragraphs on Actol, Airol, Argentamin, Argentlo Argonin, Chinosol, etc. "PHARMAKON."

Atlas and Epitome of Diseases caused by Accidents. By Dr GOLEBIEWSKI, translated from the German by Dr PEARCE BAILEY, New York. Pp. 549. Philadelphia: W. B. Saunders & Company. Price 16s. net.

THE reproduction in English of this *hand-atlas* is evidently the outcome of certain questions which have arisen in this country and in America since the adoption of Workman's Compensation for Injuries Acts. It is founded on an extensive experience of the author of the working of the German "Workman's Insurance Act," a measure which has been in force in Germany for some sixteen years. Remarks and additional notes have been added by the American editor concerning cases which have occurred in America. It appears to us a wise provision in the German Act that the compensation awarded by their courts may from time to time be readjusted according as the injured person makes more or less improvement than was originally estimated, for it must obviously lessen the risk of shamming or exaggeration of symptoms, though it must increase the work of the law courts to no small extent.

The work is divided into two parts. Part I. deals with "General Considerations" of injuries in reference to their ultimate results and not to the symptoms and treatment of injuries in their early or healing stages. The omission of the ordinary surgical text-book details merits favourable criticism. From time to time reference is made to the liability of employers of labour, and certainly this seems to be sometimes far-reaching when we learn that "compensation has been allowed in cases of carcinoma and sarcoma, traumatism having been recognised as the indirect cause of the disease" (page 81).

Part II. is composed of a collection of series of cases

illustrating the ultimate results of injuries in different parts of the body. It is illustrated by 40 coloured plates and 143 illustrations in black. The latter are good; the skiagrams not having been "retouched" are satisfactory; but the outstanding feature of the work is the unusual excellence of the coloured plates. As works of art they lack background, which always gives an artistic finish to good sketches; but as regards drawing, detail and colouring it would be difficult to speak too highly.

There can be no doubt that the work is a welcome addition to the surgery of accidents in their latest stages; and though it is a book which will be useful to all medical men who have to do with the medico-legal aspects of injuries, we can scarcely agree with the American editor that "it should also have a wide field of usefulness in the legal profession." The translation is good and the Americanisms in terms and spelling are less obtrusive than usual.

Pye's Surgical Handicraft: A Manual of Surgical Manipulations, Minor Surgery, and other matters connected with the work of House-Surgeons and Surgical Dressers. Fourth edition. Revised and Edited by BERTRAM M. H. ROGERS, B.A., M.D., B.Ch.Oxon. 8vo, pp. 550, with 264 illustrations. Bristol: John Wright & Co. 1900. Price 10s. 6d.

THIS practical manual has already established itself as a standard work of reference and guidance to house-surgeons and others engaged in surgical work. It is so well known and so highly valued that the appearance of a fourth edition merely requires to be chronicled. Dr Rogers has performed his editorial duties with great care, and on the whole has brought the work well up to date. A useful chapter on dislocations has been added, although if so disposed, we might criticise the classification of these injuries. Few surgeons, we fancy, will now-a-days agree with the advice given on page 201, "that when a dislocation is complicated by a fracture, the fracture must be set and the limb fixed in splints before the dislocation is reduced." It is certainly preferable to reduce the dislocation first, by operative measures if necessary, and then to set the fracture.

The chapter on the arrest of hæmorrhage strikes us as particularly good; but that on antiseptic surgery is insufficient. We find no mention of the ambulant method of treating fractures, nor of the injection of tuberculous joints with iodoform emulsion; and we might have expected the writer to grant a wider field of usefulness to massage and early movement in the treatment of fractures, sprains, and other injuries.

Is the writer sarcastic when he writes on page 435 regarding the curves of catheters, "the standard one is usually called 'Brodie's,' but many surgeons preferred to have their instruments curved according to their own ideas"?

Although of no great artistic merit, the illustrations of the work are well fitted to fulfil their purpose.

"SCOT."

The Scottish Medical and Surgical Journal Limited, Statutory Annual Meeting

THE first annual meeting of The Scottish Medical and Surgical Journal Company, Limited, was held in Edinburgh on Tuesday, 28th May 1901.

Mr Joseph Bell, Chairman of the Directors, presided, and in moving the adoption of the report he congratulated the shareholders on the great improvement which had taken place in their business during the past year. While their expenses had been reduced by publishing the journal themselves, he was glad to be able to point out that there had been a considerable increase in their receipts, and this was due to a large extent to the energy and management of their officials. The necessary expenses of managing a concern under the Limited Companies Acts was considerable, and had it not been for these they would have found themselves in even a better position. They would notice that it was proposed to pay a dividend of five per cent. on the preference shares, and to carry forward a considerable sum—a sum almost equal to a dividend of five per cent.—but he thought that they would recognise the wisdom of thus strengthening their financial position at this early stage of the Company's existence. He trusted that with the loyal co-operation of every shareholder they would go on and prosper, and that they might look forward to an even greater amount of success in the current year.

The Directors' report and balance sheet was unanimously adopted, and the proposed dividend declared. The rest of the business was purely formal, and the meeting terminated with a cordial vote of thanks to the Editor, the Sub-Editor, and the Secretary for the able and energetic way in which the Company's business had been carried on.

NOTICE.

All communications to the Editorial Department, including Exchanges and Books for Review, should be addressed to THE EDITOR, Dr W. RUSSELL, 3 *Walker Street, Edinburgh, and all business communications, including Subscriptions, Advertisements, &c., to* THE SUB-EDITOR, Dr NORMAN WALKER, 7 *Manor Place, Edinburgh.*

THE SCOTTISH
MEDICAL AND SURGICAL
JOURNAL

PRESIDENTIAL ADDRESS

ON

MODERN ADVANCES IN THE TREATMENT OF THE INSANE

Delivered at 43rd Annual Meeting of Forfarshire Medical Association, at Sunnyside Asylum, July 4th, 1901

By J. G. HAVELOCK, M.D.,
Medical Superintendent, Royal Asylum, Montrose

GENTLEMEN,—My first pleasant duty is to thank the members of the Association for electing me to the honourable post of president; my second, as administrative head of this institution, to extend a cordial welcome to the large and representative gathering who have accepted the Managers' invitation to Sunnyside. We have also a duty to perform of a more grievous kind, and that is to express the great loss this Association has sustained by the untimely death of my predecessor in the chair, the late Dr Aymer of Bervie. As one who was privileged to know Dr Aymer well, both in a professional and private capacity, I can testify, if that were necessary, to his skill and kindliness as a physician, and his unfailing courtesy, integrity, and amiability as a friend.

We have also to regret the absence, through advancing years and infirmities, of two original members of the Association, Dr Samuel Lawrence of Montrose, and Dr J. W. Miller of Dundee. While it would perhaps be vain to hope that they may be restored to their former vigour, we trust that they may continue to take an intelligent interest in the pro-

ceedings of this Association, which owes so much of its present prosperity to their labours during the forty-three years of its existence.

I propose, in the course of a short address, to give a *résumé* of recent developments in the domain of psychiatry, especially during the last decade of the nineteenth century, and I hope that I may be able to summarise the facts in such a way as to interest those members present who are engaged in general practice.

The first great movement I shall refer to is the erection of detached hospitals at asylums which I may say originated in the hospital at Montrose Asylum some ten years ago. This building has been imitated in various ways by almost all the large Scotch asylums, and it would be difficult to over-estimate the enormous influence that hospital treatment has exercised in the care of the insane of this country. The hospital at Sunnyside was primarily intended for the treatment of those patients who were in bad bodily health, but later buildings of its class elsewhere have been designed to accommodate, in addition, all the newly admitted cases. It is still a subject of debate whether acute cases are best treated in a building where all the cases of bodily illness occurring in the chronic class are accommodated, but this is not the time to discuss such a contentious matter. It is our custom at Montrose to allocate our cases immediately on admission to the various parts of the asylum where they can best be dealt with, and to avoid the aggregation of all the recent cases in one ward or division. For instance, a large number are drafted on arrival to the hospital—all those who require treatment in bed or suffer from any serious bodily infirmity; other cases free from dangerous and destructive propensities are sent to quiet wards where they will not be disturbed by contact with the actively insane; others are sent to a ward where special provision is made for imbeciles and idiots; while others who are excited, noisy, destructive, or have suicidal or homicidal tendencies, are placed in one of two wards where the staff can effectively supervise them. There is much to be said in favour of this early classification of recent cases; the less interesting ones are not lost sight of as they are apt to be in a block full of recent admissions, and the nurses

in each ward having only a few recent cases to supervise take a strong individual interest in them, *e.g.* they encourage them to employ themselves and take advantage of the recreations provided. Their symptoms are also more closely observed, and the constant influx of new cases has a beneficial influence on the whole staff.

Bed treatment of the violent insane (1) has recently been strongly advocated by several asylum physicians on the Continent. A patient labouring under acute mania is kept in bed continuously, except for two or three hours in the afternoon when he is sent out for exercise. Bed treatment is considered by these authorities to be always necessary and always possible in such cases. I have failed to see any advantage in confining a maniac to bed unless there is some indication of failure in bodily strength. At Montrose we treat cases of acute delirious mania and melancholia in bed in the hospital as there is rapid exhaustion in such cases tending to a fatal result, and all other cases where the physical condition indicates the necessity of rest in the recumbent position. Ordinary cases of mania, where the bodily condition is robust, are in my opinion best treated by being kept in the open air as much as possible; not violently but sufficiently exercised, special care being taken in inclement weather that the patient from improper exposure does not become chilled. This open-air treatment stimulates the appetite, which is so often in abeyance in acutely excited cases, and promotes that best of restoratives sound sleep at night without the use of sedatives. I should think that many of you have experienced the great difficulty there is in treating acutely excited cases at their own homes, and the ofttimes disappointing result of bed treatment in such cases even where the pecuniary circumstances of the patient enabled you to command the very best nursing and attendance. Bed treatment at home, in my experience, has been tried in a great many of our cases, and it is only when that fails that the patient is removed to the asylum.

On the other hand I can relate numerous cases where the patient has been confined to bed for months and even years in his own home, the case all the time going from bad to worse, and the striking improvement shown at once when removed to the asylum and bed treatment discontinued.

I instance two such cases:—

Miss A. B., a lady of independent means, aged 64, prior to admission had been confined to bed for nine years labouring under a variety of delusions of persecution; steadily growing more irritable and unmanageable until she was quite beyond the control of her friends. When she came to asylum she presented a haggard, emaciated appearance, and had to be carried on a stretcher. As there was no organic bodily disorder she was gradually induced to sit up for a few hours daily, until at the end of a fortnight she was out of bed all day. Rapid physical and mental improvement followed, she gained enormously in weight, and at the end of a month, instead of being a poor, dying creature, she was walking in the garden, and had lost all her invalid ways. Mentally also there was great improvement. She still had delusions but behaved in a rational manner, and, were it not certain that if she went home at that early period she would drift back to bed, she could have been with safety discharged after six weeks' treatment.

The second case is that of Miss B. C., aged 46, who had been insane for two years, the last nine months of which was spent in a nursing-home, where she had been confined to bed continuously, but had become so violent and noisy that it was necessary to send her to Sunnyside. When admitted she was excited, restless, sleepless, noisy at night, very violent at times; had the delusion that she was married to a doctor, had thousands of children, and that they were being born every night in shovelsful. As there was nothing in her physical state demanding treatment in bed she was partly coaxed and partly coerced to leave it. Very rapid improvement followed, so that at the end of a week she was free from excitement during the day, employing herself sewing and knitting, and sleeping well at night. This improvement was maintained, and there has been no recurrence of the urgent symptoms which made asylum treatment necessary.

The conclusion that I would draw from these and many similar cases is that the best results of treatment are obtained by a judicious use of all the methods available, not by restricting one's practice to "bed-treatment" or "exercise-treatment,"

but rather by a careful consideration of what best meets each individual case.

Improvement in Night Supervision.—By no means the least important of the advances made in recent years is the greatly-increased supervision of patients by night. When I first came to Montrose about twelve years ago I was astonished to find that the night staff consisted of only two persons, a male and a female night attendant, who had charge of 500 patients. There was no observation dormitory, or arrangement for keeping suicidal or other anxious cases under constant observation during the night. Notwithstanding this want of supervision there were few accidents during the night, a fact which may be attributed partly to good fortune and partly to the unceasing vigilance of the small night staff. At the present time we have a night staff of ten persons for 680 patients, a very large number of whom sleep in dormitories under constant observation. A similar improvement in the night-nursing has been going on in other asylums with the most beneficial results, so that the old strong single rooms are occupied as a rule by quiet cases as rooms of privilege, while those patients who are destructive, suicidal, and otherwise troublesome sleep under observation.

Villa Colony Asylums.—The next great movement to which I shall refer is one which promises to effect a complete revolution in asylum construction in this country. Instead of a large building on the pavilion system, asylums are being constructed consisting of a number of isolated blocks or villas scattered over an estate, with no connecting corridors. There is usually a number of central buildings for administration, kitchen, stores, laundry, electric-lighting station, etc., and the patients are accommodated in villas of various sizes, each containing from fifteen to forty inmates. Some of these villas are for acute cases, others for hospital cases, others for epileptics, and others for the various classes of chronic patients.

The food is all cooked in the central kitchen, and is carried to the various houses in a waggon specially constructed for the purpose.

The houses for the two sexes are in different groups forming a male and a female colony respectively.

This villa colony system had its birth-place in Germany, where five or six asylums of this type have been erected (2). There are also a few asylums built on this plan in America. Among the advantages claimed are low initial cost, more home-like character of the buildings, better classification of the patients, and the asylum can be more readily enlarged without disturbing existing arrangements.

Two large asylums on the villa colony plan are now being erected in Scotland, one at Edinburgh and the other at Aberdeen. As regards the important point of initial cost it cannot be said that the new asylum for Edinburgh at Bangour compares favourably with even the most expensive asylums on the pavilion system. It is impossible to arrive at the initial cost even approximately as it is variously stated at from £500 to £700 per bed, whereas the most expensive asylum on the pavilion plan in Scotland cost in all about £400 per bed. In Germany the initial cost seems to be rather less than £250 per bed, so that the Edinburgh District Lunacy Board must either have improved very considerably on the German plans or have plunged into reckless extravagance. The New District Asylum at Aberdeen is being erected on a more modest scale, but I am unable to state the estimated cost.

It has been urged against this villa system that it will prove expensive to work, that there will be more difficulty in supervising the attendants and the patients, and that there will be greater risk of escapes, suicides and other accidents. I have not the least doubt that owing to the very different ideas regarding the supervision of patients which prevail in this country to those in Germany, the villa colony asylum will be much more expensive to work here than it is there. As an instance of this I may mention that in the last report of one of the German Asylums it is stated that 200 of the inmates escaped during the year, and 80 of them were not brought back.

We have two buildings at Sunnyside which you have had an opportunity of inspecting this afternoon that are, in many respects, comparable to the houses of a villa colony asylum. These are the lodge which contains fourteen female patients, and the new villa for male patients which accommodates sixty cases of the quiet and convalescent class who work on the farm and garden.

I am convinced that many patients may with great advantage be treated in detached buildings on the villa colony system, and that many others are more suitably accommodated in a larger building with pavilions connected by corridors with the administrative block.

New Remedies.—The number of new drugs introduced during the last few years is legion, but in my practice they have almost all failed to come up to expectations.

Thyroid gland treatment was very extensively tried at Montrose Asylum a few years ago, but, except in the insanity of myxœdema, it has proved a total failure. I may say that I have never known a case recover under thyroid who would not very probably have got well without it. What then is the explanation of the successful cases recorded by many able and conscientious physicians? I think it is simply this, that insanity is such a variable disease that in many cases it is quite impossible to give an accurate prognosis until the case is well on the way to recovery, and it is quite a common experience for a patient to recover when the symptoms have all along been pointing to confirmed dementia.

As an instance of this I relate the following case which might have been treated by thyroid, but was subjected, fortunately, to no special treatment prior to recovery, or we should certainly have claimed it as a "cure."

Mrs S., a widow, aged 39, had fallen into a state of profound melancholia after her husband's death, was admitted to Montrose Asylum in November 1894. Mrs S. continued in this state of intense depression with apathy and semi-stupor, refusing to speak, untidy in her habits, not even recognising her friends until November 1899, *i.e.* five years after admission. Quite suddenly one morning she began to talk to me while on my visit, asking about her friends and home. She continued to go on well, cheerful, industrious, rational in conversation and conduct. A few months later she was discharged as recovered, and has since remained quite well.

As regards sedatives and hypnotics, I feel confident that some of the newer remedies are of value when employed in suitable cases. By far the most valuable and safest hypnotic in my experience is *Paraldehyde.* It is specially useful in

senile cases where there is intractable nocturnal restlessness. In these cases it often acts like a charm, but we find that it is necessary to give a large dose—commonly 3 to 4 drachms. A dose of one drachm often makes the patient worse, and aggravates all the symptoms. The change in a restless senile case who does well with paraldehyde—and 75 per cent. do well—is most striking; and it is gratifying to see a case of senile mania, that has utterly exhausted the friends at home, under its administration slumber peacefully all night and behave rationally all day. I have never seen a case prostrated by the use of paraldehyde, and this I can say of no other hypnotic when given in large doses. I find, however, that paraldehyde is useless in the excitement of general paralysis and in senile alcoholics. Chloral is better in these cases, and is often the only remedy which calms the fearful excitement of the early stage of general paralysis. I seldom give any hypnotic in an ordinary acute case; but if that is necessary, *e.g.* where the patient has heart disease, I usually give paraldehyde in smaller doses. I think the effect of this drug is very similar to that of a stiff glass of hot whisky at bed-time on one unaccustomed to stimulants.

Sulphonal and Trional.—A word of warning about the indiscriminate use of these very powerful and dangerous drugs is necessary, I think, judging from some cases I have lately seen in private. When sulphonal was first introduced it was considered to be as safe as bromide of potassium, and, even yet, I find that its dangers are not fully recognised by general practitioners. Like many other drugs it reacts very unfavourably on certain constitutions, and causes cumulative poisoning. Sulphonal poisoning is indicated by great prostration and vomiting, obstinate constipation and abdominal pain, with the presence of hæmato-porphyrin in the urine, giving it the colour of port wine. Some cases rapidly end fatally, in spite of immediate stoppage of the drug and the use of appropriate remedies. Fatal cases are recorded after the administration of small quantities of sulphonal, and in no case should it be administered unless special care is taken to ensure free action of the bowels.

Trional is not so apt to set up hæmato-porphyrinuria as sulphonal, but its use is by no means free from this danger.

I find it very useful in cases of recurrent mania; it wards off the attacks and diminishes the excitement; it also suits some senile cases where paraldehyde has failed.

The following case illustrates the utility of trional in recurrent mania:—

Miss Y. Z., medical student, aged 32, admitted to Montrose Asylum in December 1895. Had an attack of acute mania in 1887, followed by numerous other attacks. Though always unstable she was free from maniacal excitement until two months previous to her admission, when she again became maniacal and had recurrent periods of wild excitement. On admission she was extremely restless, noisy, destructive, erotic, violent and dangerous to others. In spite of all treatment, attacks of excitement succeeded each other until she was almost constantly maniacal and rarely quiet for more than a week at a time. This condition continued during 1896, '97, and '98. At the end of 1898 Miss Y. Z. was so excessively troublesome—almost constantly excited, destructive, noisy, and devoid of all decency—that I determined to try the effect of regular administration of trional. Her case, which had gone on steadily for four years from bad to worse, was regarded as incurable. Ten grains of trional were given daily, and purgatives twice a week. After the first week of this treatment patient was considerably improved and free from maniacal excitement. To our surprise this state of quiescence was maintained; but as she showed considerable instability and there were several threatenings of maniacal outbursts, the treatment was continued for twelve months. At the end of that time patient seemed to be so well that trional was discontinued. She continued to progress favourably, showed increased stability and absence of undue irritability, and was finally discharged recovered in August 1900. Patient has since lived with her friends and there has been no relapse.

This case is quite an exceptional one, as is the following, which shows a great tolerance of sulphonal:—

Miss C. D., admitted in 1893, with acute mania of the most intractable kind. Continued acutely maniacal—noisy, restless, incoherent, destructive, mischievous, indecent in conduct and troublesome to the last degree. This patient was the most troublesome case in the asylum for two years, when

she was put on sulphonal, getting a single dose of 40 grains on alternate days. The result was so satisfactory that the treatment was continued, and under the influence of this sedative all the violent, destructive, and erotic propensities are kept in subjection and she is easy to manage, goes to chapel and entertainments, and takes her meals at the private table in an orderly way. Several attempts have been made to manage this patient without the use of a sedative, but if it is discontinued for a few days she relapses into the most violent and depraved mania, refusing food, and becomes so utterly unmanageable that the treatment has to be resumed. For five years she has had 40 grains of sulphonal every other day, and for the last three years an average of 20 grains per diem; yet she is physically very strong, eats heartily, and has never shown any intolerance of the drug. In fact, we believe it prolongs her life.

As regards other sedatives of recent introduction we find hyoscin useful only in exceptional cases of extreme urgency; dormiol and chloralamid are of doubtful utility, and we now very seldom employ them.

In conclusion, I shall briefly refer to a movement of the very highest importance in connection with the prevention of insanity, and that is the establishment of laboratories in various centres equipped specially for pathological research. There is an immense field of research open to investigators in this department, and the laboratory of the Scottish Asylums in Edinburgh has already accomplished much valuable work. Modern theories as to the causation of insanity tend in the direction of placing the operation of toxic agents in the first place.

Dr Ford Robertson (3) states that "there are now satisfactory grounds for regarding acute insanity as the expression of the action of toxic agents upon the cortical nerve cells." But this theory does not carry us very far, for the question at once arises, What are the toxins, and how are they produced? Do they exist in all individuals, and if so, why do they react on the nerve cells of some brains and not on others? All this brings us back to the old vexed question of heredity.

As with phthisis, so is it with insanity. There is a

field-day for toxins, as there has been for the tubercle bacillus.

When the first ardour of the crusade against the hereditary character of consumption is abating, it must often occur to the unbiassed observer that the tubercle bacillus is so omni-present that we are all daily and even hourly exposed to its action, but that only in those hereditarily pre-disposed does it find a suitable soil for its growth.

Those who are hereditarily pre-disposed to consumption must take all precautions against an unequal combat with the tubercle bacillus; while those with insane heredity should so order their lives that their nervous tissues may offer a stubborn resistance to the depredations of those toxins which set up insanity.

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CLINICAL LECTURE

ON

A CASE OF HEART DISEASE AND ITS TREATMENT

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B. D., aged 57, a hatter, was admitted to the Infirmary on the 6th of December 1900, complaining of pain over the præcordia, palpitation, shortness of breath, and cough, and stating that he had been ill for about five months.

History.—His family history is fairly good, his surroundings at home are favourable, at his work he is somewhat exposed to variations in temperature, but his work entails no great strain. As regards habits, he has probably taken more alcohol than was good for him.

As regards previous illnesses, he tells us that, beyond the ordinary diseases of childhood, he has had only one serious illness. This occurred fourteen years ago, when, as the result of an accident to his hand, he suffered from some form of blood poisoning, which kept him in hospital for several weeks. From this, however, he seems to have completely recovered, and he remained well till about five months ago. At this time he began to suffer from palpitation and shortness of breath, and these symptoms gradually becoming worse, and cough, general weakness, with some swelling at the ankles having supervened, he acceded to his doctor's advice to come to the Infirmary, and he was admitted as above.

State on admission.—His height is 5 ft. 5 in. and weight 10½ stones. His development and muscularity are fairly good. His cheeks are ruddy, with over-filled capillaries, but show no distinct cyanosis. His temperature is normal, and his pulse between 80 and 90 per minute, is small and compressible, and distinctly irregular.

Alimentary system.—His appetite is fairly good, but after meals he suffers from a feeling of distension and flatulence. The bowels are regular. His abdomen is somewhat distended, the liver is much enlarged, its lower border in the nipple line reaching as low as the level of the umbilicus. There is also evidence of slight ascites.

Hemopoietic system.—There is no enlargement of the lymphatic glands, and his spleen does not seem to be increased in size. Examination of the blood reveals sp. g. 1060, red corpuscles 5,560,000, hæmoglobin 80 per cent.

Circulatory system.—He complains of occasional pain over the præcordia, with palpitation, and considerable shortness of breath on any exertion. On examination, the apex of the heart is found in the fifth interspace, slightly outside the nipple line. There is distinct epigastric pulsation. On auscultation, systolic and pre-systolic murmurs are heard distinctly at the mitral area, whilst at the aortic area a slight systolic and markedly accentuated second sound are heard. His pulse is very irregular, and beats about 84 per minute. Its volume is small, and it is rather soft in character. There is no great thickening of the arteries.

Respiratory system.—Respirations are 24 per minute, and

he complains of cough with slight watery and frothy expectoration. On examination evidence of bronchitis can be made out, with some effusion on the right side.

Urinary system.—His urine is in quantity about 50 or 60 oz.; sp. g. 1015. It contains a slight amount of albumen, and a trace also of blood, with a few granular casts.

The integumentary system shows nothing abnormal, except some slight swelling of the ankles.

His nervous system is practically normal. He does not complain of giddiness, and he sleeps fairly well.

In this patient our diagnosis is as follows:—Mitral regurgitation with stenosis — aortic stenosis, with possibly occasional aortic regurgitation—failure of compensation, and symptoms mainly of backward pressure (mitral type), viz., dyspnœa, bronchitis, congestion and œdema of lungs—hydrothorax of right chest—congestive enlargement of liver, a congestion of the portal system, with dyspepsia, flatulence and ascites—congestion of the kidneys, with slight hæmaturia—congestion of the peripheral veins, with dropsy of the ankles. Lastly, he has symptoms due to disturbance in the heart muscle itself. The cardiac pain and palpitation betokens probably over-distension and dilatation of the cavities, possibly some fatty change in the walls.

Of these symptoms the urinary condition requires a little further reference, and the question here is—are the albuminuria, hæmaturia, and casts the result simply of backward pressure and congestion of the kidneys; or is there some nephritis? If it were a case simply of congestion we should expect that since the cardiac weakness beginning five months ago has been gradually increasing, we should have a history of progressive diminution in the quantity of the urine, as the dropsy and backward pressure symptoms became more marked. We should expect also that the sp. g. would be rather high. On the other hand, if there is some interstitial nephritis, we should expect that the diminution in the quantity of the urine would not be so marked, and that the sp. g. would not be so high. We should also expect a history of polyuria, before the symptoms of failure of compensation supervened.

This is indeed what we get; his urine at present, though not so copious as formerly, is yet fairly plentiful, and of sp. g.

1015. We therefore think that our patient has had valvular disease for several years, and that it possibly occurred as an endocarditis with the attack of blood poisoning fourteen years ago. We think also that he has had some slight chronic interstitial nephritis for several years as the result of this combination of heart-mischief, exposure and alcohol.

Five months ago, however, failure of compensation occurred, and this has led to serious backward pressure symptoms, and to aggravation of his renal condition.

So much for the diagnosis in our patient. We next come to the question of the prognosis, and in arriving at a conclusion on this point we have to consider in our patient as we do in all heart cases—(1) the amount of the valvular lesion; (2) whether it is increasing or stationary; and (3) what are the chances of compensation being re-established.

First as regards the amount of the valvular lesion. We believe that the amount of the mitral stenosis is not great, because by percussion we do not find the left auricle enlarged to any extent, and from the character of the pulse we do not consider that the amount of aortic stenosis and regurgitation is great. We think that the mitral regurgitation is, on the other hand, considerable. In coming to a conclusion on the amount and severity of valvular lesion, we have always to remember that the loudness of the murmur or murmurs is no guide; we judge mainly by the pulse, the indications of enlargements of the various cavities, and the evidence of backward pressure.

Secondly, as regards whether the valvular lesions are progressive or stationary. Of this we judge mainly by the temperature chart, and as in our patient this is absolutely normal, we conclude that those lesions are practically stationary. Whether or not it be the case that the valvular disease began by an endocarditic attack fourteen years ago, it is almost certain that slight chronic changes have been going on since, but these have been, and are, so chronic that, so far as prognosis at present is concerned, they may be neglected.

Thirdly, as regards the chances of compensation. It is evident that, except in children in whom the periods of puberty and adolescence must always loom threateningly, the earlier the age at which a valvular lesion has occurred, the greater are the probabilities of the required extra nutrition of the heart

muscle supervening. Thus, unfortunately, our patient's chances cannot be considered great, for at fifty-seven he must be regarded as having passed some distance downhill from the nutritive point of view. Moreover, the other aspect from which compensation possibilities must be looked at, viz., that of circumstances, is also unfavourable. Although his occupation has not involved very much physical strain, he has to withstand exposures to cold and sudden changes of temperature, and in addition, he is not accustomed, I believe, to exercise that care for the preservation of his own health which it is every man's duty to do. He seems indeed to me to have been a man of good constitution and superabundant energy, but in whom this energy has caused him to drive his tissues to work till they can be driven no longer. It will be noticed that his compensation failure of five months ago was not the result of any extra work, extra exposure, or acute disease. It was a real failure, not a mishap, and so I believe that by the most careful treatment, the best we can expect for him is only a short period of invalid existence.

But before leaving the subject of compensation, let me make a digression and draw attention for a moment to another feature in this patient's case which I think merits attention. This is that, as already stated, examination of his blood revealed a sp. g. of 1060, red corpuscles up to 5,560,000, and hæmoglobin up to 80 per cent. A relative richness in corpuscles and hæmoglobin in mitral heart cases, and in congenital heart cases with cyanosis, has for some time been recognised, and by most observers this is explained as being the result simply of mechanical causes, viz., concentration by the transudation of the fluid part of the blood into serous cavities, lymph spaces, etc. I need not enter here into a discussion on this point, but I wish to say that it seems to me that these mechanical conditions cannot always account for it, and that an explanation may be sought for on the assumption that compensatory efforts on the part of the blood itself occur. I have elsewhere suggested this as explaining to a similar extent the frequent great richness of the blood in cases of diabetes melitus, which are holding their own as regards nutrition. This also has, I think, too narrowly been regarded as being due to concentration alone.

Next we come to the consideration of the very important subject of the treatment of the heart disease, and notably in cases of mitral lesion, of which our patient is an example. Briefly stated this may be summed up in the following:—rest, diet, general tonics, heart tonics, and treatment of the associated symptoms, viz. lung troubles, digestive disturbances, kidney disturbances, and dropsies.

Rest.—This is all-important in organic heart disease, and most frequently we find that absolute rest in bed is essential. Rest in bed not only eases the heart because it relieves it as regards the patient doing physical work, but we must remember that by it all the tissues have less to do—less food is required and the bodily heat is more easily maintained. Many heart cases require little or nothing more than rest in bed; in heart dilatation the result of strain, of toxic or infective substances in the blood, or of chlorosis, we prescribe medicines as well, but we know that the heart troubles would often repair without the drugs, and that they would seldom do this without the rest.

It is sometimes urged by patients against complete rest in bed that by it they get thin and weak. To meet this objection, gentle passive movements and massage may be prescribed as well, and a good deal of the irksomeness of complete rest in bed may be got rid of if arrangements can be made to have the patient's bed out in the open air in suitable weather, as is done in lung cases.

Diet.—If digestion is sufficiently good, we advise solid food, nutritious, simple and well-cooked, and mainly of a nitrogenous character, such as fish, chicken, chop, bread, etc. We endeavour to diminish as much as possible the starchy and saccharine articles, and we remember that tea, alcohol, and tobacco have, in all heart cases, to be carefully considered from the individual point of view. As regards diet, Balfour has given the following rules:—

1. Never less than 5 hours between each meal.
2. No solid food between meals.
3. Principal meal to be taken in the middle of the day.
4. Meals to be kept as dry as possible.

In bad cases, where digestion is feeble, and where solid food cannot be taken, we have recourse to meat and chicken

jellies, strong soups, etc., and naturally these must be given at shorter intervals. We must never forget, however, that in planning out a diet, we have to consider it as regards each individual patient, and that foods which one can digest and assimilate with benefit, another may not be able to digest at all. Bearing the above general rules in mind, however, we can readily adapt them to individual patients.

In cases of heart disease further, great attention is required to the state of the bowels; anything which favours portal congestion with its attendant dyspepsia, flatulence, and distension being most harmful. Thus a few grains of calomel, or a rhubarb or colocynth pill at night and some Henry's solution in the mornings is often a matter of routine.

As regards general tonics, the mineral acids and vegetable bitters are often useful, as also are preparations of iron, arsenic, and strychnine. When there is a tendency to rheumatism, a few grains of iodide of potassium with 2 or 3 drops of liq. ammon. fort. may do good; and in the more chronic rheumatic heart cases, especially in young people, and when there is a tendency to anæmia, I often prescribe a few drops of the liq. arsen. hydrochlor. in a teaspoonful of cod-liver oil, to be taken twice or thrice daily.

Lastly, in connection with the treatment of heart mischief in its milder forms, the good effects of change of air and scene must never be overlooked. I have known men who, at their ordinary work in Edinburgh, could not walk up the slightest incline without suffering from dyspnœa and severe chest pain, and yet when they went for a few days to some place a few miles out in the country, they could walk about on hilly roads without the slightest trouble. A very sensible old lady friend of mine used to say that for health a change of air even for the worse, is better than no change at all—in this one often seems to see a good deal of truth.

But in a large number of heart cases, compensation failure is so serious that drugs which exercise a direct effect on the heart and circulatory organs are indicated. These are such as digitalis, strophanthus, convallaria, adonis vernalis, spartein, etc., and under their use we hope to procure a so-called toning up of the circulation, viz., a less rapid and more powerful beat of the heart, a better filling of the arterial

system, and a corresponding lessening in the fulness of the veins.

Before, however, considering the special actions towards this end of those drugs, let me make another digression. This is to endeavour to discover to what extent we are to interpret as being for good this so-called toning up of the circulation.

An example will best serve to explain my meaning. Suppose that about the third or fourth day of an acute pneumonia we find a patient's pulse beating at the rate of 120 per minute, and presenting a rather small, soft and compressible wave. Suppose we now give digitalis, or digitalis and strychnin, and find some hours afterwards that the pulse is 10 or 15 beats per minute slower, and that it presents distinctly higher tension. Are we to conclude from this alone that we have necessarily improved our patient's condition, and that he will advance towards his crisis with a better chance of recovery?

Take the illustration of the cycle. Two cyclists of equal vigour, let us suppose, are ascending a long hill, one on a high, the other on a low geared machine. The former has to work his pedals comparatively slowly, putting great force into each stroke; the latter can work his pedals much more rapidly, putting much less force into each stroke. Of course, we know that if they both reach the top of the hill at the same time, and that if they and their machines are of equal weight, theoretically they must each of them have expended the same amount of energy in the ascent; but if then we ask, which of the two is the less blown, and the better fitted to continue his journey, it is quite another matter.

Moreover, the results of physiological experiment, which the thoughtful physician must always criticise carefully before applying therapeutically, are extremely interesting in this aspect. The depressor nerve is, as we all know, a nerve which passes between the heart and the medulla, and which, when stimulated, causes a dilation in the small arteries of the intestinal circulation, and a consequent fall in the blood pressure. The use of this is believed to be that when from any cause the arterial pressure is so high that the heart has difficulty in driving on the blood, it can, as it were, send a message by the depressor nerve to the vaso-motor centre in the medulla, as the result of which the intestinal arteries are

dilated, the arterial pressure falls, and it, the heart, can contract more easily. It is to be noticed that in this case, with the fall in the blood pressure, the rate of the heart beat is not materially altered, so that in this, the analogy with the high and the low geared cycle is not quite borne out. Still, all this shows us that a somewhat low tension pulse may not be an unmixed evil.

But, further, the phenomenon of the "second wind" has probably a very similar explanation. When the athlete begins his work we know that, as the result of exertion, the less pure blood, or perhaps the greater oxygen hunger, causes the vascular, cardiac and respiratory mechanisms to be excited to an extreme degree. But at once depressor actions come into play, and with lowering of peripheral resistance in the arteries, and probably also with lowering of the irritability of the respiratory and other centres, circulation and respiration are made to go on more easily, and so the athlete can continue his struggle in comparative comfort. Naturally, his circulating blood must be less pure, and as he goes on to his third or fourth wind, it must become less and less so. Yet his sensations and his power of continuing work are greatly bettered. Moreover, we may be sure that as the result of his circulatory and respiratory mechanisms working more calmly, his nutritive processes must also be better performed. We often speak of the compensation power of the heart muscle; we are, I think, too little mindful of this pre-acting compensatory nerve mechanism, which goes far to rendering this muscle compensation possible.

And now let us return to the consideration of the various heart tonics in detail, and first of all of digitalis. As already stated, this drug slows the heart and raises the blood pressure. This slowing of the heart allows the ventricles to become fuller, and so a larger wave is sent into the arteries at each beat. In this way veins are emptied and arteries filled, and so backward venous pressure in lungs, liver, portal system, kidneys, subcutaneous tissue, etc., is relieved. In the kidneys this leads to increased flow of urine, and this increased flow is also directly aided by the increased arterial pressure. Hence digitalis acts also as a diuretic.

Thus this drug is a most valuable one in the treatment of heart diseases, and many heart cases are kept well for long periods by taking it, and it alone.

But now we meet with cases which do not improve with digitalis, and in such cases we want to know one or other of three things :—

1. Does digitalis not suit the condition; is it even harmful?
2. Are we giving too much digitalis, or not giving enough?
3. Is the failure of digitalis due to the heart being so bad that nothing can help it?

Let us consider the first of these in the first place.

There is no doubt that in certain cases of heart disease the administration of digitalis seems to aggravate the patient's troubles, and many explanations of this have been given. These are, however, mainly physiological and experimental. I might even say physical, for there is too much of a tendency to regard the heart as a pump, the arteries as tubes with stop-cocks at their extremities, and the vaso-motor nerves as telegraph wires. There is too little a tendency to remember that these are all living tissues, and that at the ends of the arteries there are tissues which can influence powerfully the flow of blood through them, either in the way of acceleration or retardation. One needn't hope to find in literature, therefore, very satisfactory explanations; let us take them, however, in the meantime, for what they are worth.

The heart conditions in which digitalis has been said not to suit are mainly aortic regurgitation, mitral stenosis, fatty heart, arterial sclerosis with high tension, and ulcerative endocarditis.

1. *Aortic regurgitation.* — There is no doubt that in certain of such cases digitalis does not suit. The explanation of this ordinarily given is that the drug, by slowing the heart, allows the ventricle to become more and more distended in diastole, and, by raising the blood pressure, entails at this time also more forcible regurgitation into the ventricle.

Against this, however, it is to be remembered that experimental physiology shows that digitalis acts on a heart so as to prolong its contraction period (systole), and that an overdose of the drug causes stoppage of the heart in a state of powerful and complete contraction. Theoretically, therefore, digitalis should tend to counteract the over-distension and risk of asystole so liable to occur in aortic regurgitant cases. Further unbiassed

clinical observation shows us that in many examples of this form of disease, digitalis suits better than does any other drug. Balfour holds that digitalis is always useful in aortic regurgitation if given in such doses as will "rather more than counterbalance the dilating power of the arterial pressure."

Mitral stenosis.—When digitalis is found not to suit in such a case, a theoretical explanation may be sought for in the view that the left ventricle, small in size as the result of the stenosis, is rendered still smaller as the result of the drug. But here again the explanation is not satisfactory, because it leaves out of account the right ventricle, which, toned up also as the result of the digitalis, will drive the blood more powerfully through the lungs into the left ventricle, and so promote the better filling of the left ventricle in its diastole.

Fatty heart.—There is no doubt that one occasionally meets with examples of this disease in which, following the employment of digitalis, we remark a few days of distinct improvement in general condition and in pulse, and yet sudden and unexpected death from asystole occurs. The theoretical explanation of this is that the raising of the blood pressure by the drug has caused too great ventricular dilatation. But, on the other hand, it is to be remembered that many cases of fatty heart find themselves for years benefited by digitalis; and also that many cases of fatty heart die suddenly, although they have been taking no digitalis at all.

Arterial sclerosis and high arterial tension.—That this condition is one in which theoretically digitalis is contra-indicated is evident. Practically, also, we find that most patients suffering from this affection cannot well take the drug. Yet, now and again, we meet with cases which have benefited by it, and theoretically also we can conceive of circumstances in which it may be indicated. We know that high arterial tension, as, for example, in chronic Bright's disease, is salutary, in that it is in this way that the tissues are properly supplied with blood; and we can quite understand that there may be patients with a pulse tension higher than normal, and yet with a pulse tension which for them is not high enough.

Ulcerative endocarditis.—Against the employment of digitalis in this condition, it has been urged that the drug, by increasing the force of the ventricular contraction, will favour

the detachment of pieces of diseased endocardium to form emboli. This is, to my mind, another example of the mistake of the physician regarding a heart as an engineer does a pump. The heart, however, is not made of metal, but of living tissue, the nutritive condition of which can be profoundly affected by digitalis and other drugs brought to it by the blood. If any of these drugs can improve the nutritive power of its tissue, we may be sure that they will also not fail to have a beneficial effect on the endocarditis. Practically, I never witnessed any evil effect produced by digitalis on cases of ulcerative endocarditis.

These, then, are some of the conditions in which digitalis is said to be unsuitable. With the exception of the last it will be seen that all the real or supposed unfitness of the drug is ascribable to its effects in raising the blood-pressure. This leads us directly to the consideration of the next drug—strophanthus. Strophanthus is believed to affect the heart exactly like digitalis, but to differ from it in that the associated heightening of arterial pressure is due, not to contraction of the arteries, but simply to the improved action of the heart. In this way it has been regarded as being more valuable than digitalis, because whilst suitable enough in those conditions in which digitalis is suitable, it is suitable also in those other cases in which digitalis can do harm. This, however, is theoretical and experimental; and while we need only mention that some experimentalists have asserted that contraction of the peripheral arteries is really induced by strophanthus, we are, I think, entitled to conclude that, leaving the condition of the arteries out of account, if strophanthus can raise the blood-pressure by acting on the heart alone, digitalis must be able to do so too.

But now, putting theoretical considerations aside, can we form any practically useful ideas as to whether, in any given case, one should employ digitalis or strophanthus. Here, I believe, I can best serve you by giving you the results of my own experience and observation, in telling you what I ordinarily do myself. This I can do very briefly.

1. In the compensation failure of aortic regurgitation, and arterial sclerosis and chronic Bright's disease, usually begin with strophanthus; but if this does not seem to be having a

distinctly good effect, I have no hesitation in turning to digitalis. In either case I ordinarily combine those drugs with liq. trinitrinae, or potassium iodide, as being likely to ward off high tension effects. In other valvular lesions, and in fatty heart cases, I begin with digitalis; but I have no hesitation in changing to strophanthus, if the effects of digitalis are not satisfactory.

2. When the valve lesion has been due to acute endocarditic processes, I incline to digitalis; when, on the other hand, it has been due to slow atheromatous changes, I incline to strophanthus. As a rule, therefore, I begin with digitalis in the young, with strophanthus in the old.

3. When with symptoms of compensation failure the heart's action is rapid, I incline to digitalis; when it is not rapid or slow, I incline to strophanthus.

Two questions may next be asked—first, how long may those drugs be continued; and, second, how do we know if the patient is getting an over-dose? First, as to how long they may be continued with advantage. Here we have to remember the common but rather unphilosophical assertion that digitalis is cumulative and strophanthus is not. Beyond observing that, in nature, with all poisons, as with all nerve irritants, a somewhat cumulative or summating effect can be discerned, I shall not refer further to the pros and cons of this assertion as regards digitalis, because in the doses in which we employ it for prolonged periods the risks of any evil cumulative effect are very slight. Balfour states that half a fluid ounce of the infusion, or ten minims of the tincture, may be safely administered to an adult every twelve hours without fear of cumulative action, and there is no doubt that patients have taken those doses for months, or even years, with advantage, and similarly with strophanthus, in corresponding doses.

It is of course different when large doses are being employed, as, for example, when, for a few days, we are in an urgent heart case, giving fifteen or twenty minims of the digitalis tincture every few hours. This leads, however, to the other question, viz., how do we know if the patient is getting too much of the drug? The main indications of this are believed to be diminution in the quantity of the urine, increasing rapidity and irregularity of the pulse, and sickness

and nausea. These symptoms, one and all, might be, of course, regarded as associates of the downward progress of the disease; but when they show themselves rather suddenly, they are probably due to the drug. The patient's own sensations are often a good guide for the continuance of digitalis; not altogether, however, for one occasionally sees patients whose symptoms and sensations are proclaiming benefit from the drug, yet dying suddenly from asystole. The champions of strophanthus would perhaps ascribe this to the digitalis, but one sometimes sees it with strophanthus as well. The important thing is to be content with moderate doses, and to warn the patient to avoid letting his feeling of betterness lead him to do anything which entails the slightest strain.

Beyond digitalis and strophanthus our choice of drugs for heart failure is meagre. Convallaria, adonis vernalis, and spartein have all been recommended, but none of them act anything like so well.

The treatment of the lung symptoms in heart cases, viz., the bronchial catarrh and cough, and the dyspnœa with its paroxysmal exacerbations, is of great importance. Here it is in the first place to be borne in mind that the digitalis or strophanthus, by improving the pulmonary circulation, will relieve the congestion and tendency to bronchial catarrh; but drugs like potass. iodide, ammonia, and a little morphia are often invaluable. A very favourite prescription in the ward is a combination of spirit. ammon. aromat., spirit. chloroformi., liq. morpho. hydrochlor., and aq. camph. For the attacks of dyspnœa, dry cupping is of great service; and one can often notice after the application of half a dozen cups to the back of the chest, great improvement as regards the rales and rhonchi with which the attack is associated. I should perhaps mention here that for this dry cupping, cups are not necessary; the smaller sized jelly pots may be made to serve the purpose very well.

Then if hydrothorax is present to any appreciable extent, tapping again and again should be practised. With a small exploring needle this can be done in a manner which causes little or no pain, and we have cases in our wards in which the withdrawal of the quantity of 20 to 40 ounces, every few days, now from one side and now from the other, has given great

relief. In such cases one often notices that the amount of dulness at the lung base is not great, yet such quantities can be withdrawn and the relief is striking.

As regards the liver and portal congestion and the associated dyspepsia, with the ascites following the flatulence as rain follows wind, we have first to remember the relief to be looked for from the digitalis or strophanthus increasing the arterial pressure and lessening the venous. But this venous congestion can be markedly relieved by laxatives; and calomel, blue pill, compound colocynth pill, jalap powder, and Henry's solution have all their uses. For the ascites, tapping and repeated tapping is indicated as soon and as often as the fluid can be got at. For this a trocar and canula is best, small in diameter so that it causes the minimum of pain in its introduction, and long and with a side opening so that it can reach into the pelvis and efficiently drain off the fluid which is floating up the intestines.

As an example of the aid which repeated tappings may give, I cannot do better than quote the case of a man who was lately a patient in Ward 31. He was about thirty-five years of age, and had marked compensation failure with mitral disease. He had been in the ward for about three weeks when the increasing backward pressure rendered tapping necessary for the first time, and the tappings are shown in the following table:—

Sept. 30	Left pleura	41 oz.
Oct. 3	Abdomen	63 oz.
„ 28	„	84 oz.
Nov. 18	„	138 oz.
„ 21	Left pleura	93 oz.
„ 23	Abdomen	124 oz.
Dec. 1	„	30 oz.
„ 4	„	30 oz.
„ 8	„	30 oz.
„ 11	Abdomen	60 oz.
	Left pleura	76 oz.
„ 14	Abdomen	101 oz.
„ 16	Left pleura	60 oz.
	Abdomen	108 oz.
„ 24	Abdomen	156 oz.

During these weeks the patient's condition was at times so low that his friends were repeatedly sent for, yet after the last tapping he improved so markedly that with negligible quantities of fluid in his chest and abdomen he was able to walk about, and was discharged on January 18th.

For the kidney congestion with its scanty urine, albuminuria or hæmaturia, the digitalis and strophanthus again have their uses. But diuretics, like squills, and the iodide, nitrate, bitartrate, and acetate of potassium, may all be employed. Among diuretics, however, diuretin is the most outstandingly valuable. The dose of it stated in the books is 30 grains thrice daily, but I generally begin with only 10 grains thrice daily, and if the diuretin is going to be efficient, its administration soon makes itself felt.

The following table represents fairly well the increase in the urine which diuretin brings about. It represents the quantities of urine in ounces passed each day before and after the administration of the drug in the last ten of the cases of heart disease in which I found it useful. The capital letter D marks the day on which the diuretin was begun.

(1)	...	22	20 D	120	120	110
(2)	38	36	42 D	138	120	120
(3)	...	24	60 D	144	120	108
(4)	28	24	20 D	68	102	125
(5)	5	17	9 D	48	48	94
(6)	19	26	29 D	30	50	72
(7)	12	16	26 D	30	34	52
(8)	16	24	48 D	80	106	70
(9)	20	25	22 D	30	70	30
(10)	28	12	22 D	40	40	22

It will be seen that diuretin, if it is going to do good, does so very speedily, and there is no doubt that its effects are sometimes wonderful. Unfortunately, however, there are cases, as indeed the above table indicates, in which its good effects are very transient, and still more unfortunately we meet with cases in which, without increasing the urine flow, it induces sickness, and adds to the general depression.

The apocynum cannabinum I have often tried also, but I regret I cannot report favourably of it in my own experience.

I have had more success with the citrate of caffeine, yet this has never yielded results at all comparable with those yielded by diuretin.

Squill, given in pill form with digitalis, or with digitalis and blue pill, is often useful, and we had lately a case in the wards in which large doses of the infusion of scoparium (ʒii to ʒiv every four hours) acted efficiently when diuretin and other diuretics had signally failed.

In using diuretics, the question may occur to us as to whether or not they are suitable when with the heart disease we have associated organic kidney mischief. In this connection we have to remember that in many heart cases with backward pressure and albuminuria we may be for long in doubt, not only as to the extent, but even as to the existence of any real kidney disease. Hence we usually employ the drugs very cautiously, and judge from their effects. It is noteworthy, however, to observe that in organic renal disease squill is as a rule contra-indicated, while diuretin and scoparium are not.

For the dropsy of the legs, genitals, etc., when it gets to a degree beyond what gentle pressure by bandages, etc., can relieve, drainage by Southey's tubes may be tried. For a very œdematous scrotum I am in the habit of using a rather large-sized needle, with several side openings, and connected with a tube carried to a vessel on the floor. Its large size, side openings, and syphon action, together cause a rapid flow, so that the good effects are obtained in a correspondingly short time.

Lastly, in heart cases the general nerve irritability, as indicated by sleeplessness, bad dreams, Cheyne-Stokes breathing, spasmodic dyspnœic attacks, palpitation, and attacks of cardiac pain, requires careful management. Drugs, such as the bromide of potassium, nitro-glycerine, sulphonal, trional, paraldehyde, chloral, and morphia may be found of very great use. But it is appropriate here to say a little in explanation of their usefulness.

Here again we have to remember what has already been referred to—viz., that in all heart cases with failing compensation the condition of the nervous system is one of extreme irritability. In the first place it is irritated because its circulating blood contains less than the normal amount of

oxygen, and because it contains also irritating substances, the result of faulty performance of the digestive, secretory, and excretory processes. But, secondly, we have to remember that, as the result of it being thus improperly nourished, the nervous system is really very much more sensitive than normal. Thus its response to the deficiency of oxygen, and to the excess of the irritating products of metabolism in the blood, is apt to be much greater than is required. Hence what might really be compensated for by a moderate increase in respiratory frequency is apt to manifest itself as great dyspnœa with spasmodic asthmatic attacks, and what might really be compensated for by a moderate increase in the rapidity of the heart beats is apt to manifest itself in excessive pulse rate, palpitation, or cardiac pain. In the same way can be accounted for a general nerve irritability and tendency to over action, leading to sleeplessness, Cheyne-Stokes breathing, and forms of respiratory and cardiac embarrassment. When we further reflect that all this will greatly interfere with the proper performance of digestive, assimilative, and other processes on which heart nutrition and compensation depends, we can understand the great value in proper amounts of the so-called nerve sedatives.

The parts played by the depressor and other nerve mechanisms have already been referred to, and I need not discourse further upon them ; but I here take the opportunity of saying that, in my opinion, it is mainly through its action on the nerve mechanisms that the Nauheim treatment yields its successful results. Of this treatment the baths are a very important item, for by them not only are vascular dilatations in skin and other areas brought about, but *the whole nervous system is calmed down*, and so that harmful tendency to over action in cardiac and respiratory mechanisms being removed, nutritive processes are performed more readily. The Nauheim treatment seems to me to aid compensation mainly by removing the nerve conditions which render heart compensation processes difficult. Hence it will be evident that the best cases for this treatment are those in which, with the minimum of organic heart trouble, there is the maximum of nerve irritability. In the so-called Nauheim treatment there is much that one does not like. One feels that the water-drinking could

be done as well at home with home water; that the exercises prescribed could be got by a quiet "50 up" at billiards in a less childish way; and that the effects on the vascular, cardiac, and respiratory centres could be got equally well by baths in one's own house. Moreover, the elaborate chest charts and diagrams which we have sometimes seen, showing in red and blue the heart, and venous and arterial trunks, marked out with a precision which the X-rays have never yet approached, are calculated, I think, to have an irritating effect on the minds of physicians of sound principle and experience. Still, all these may have a psychological effect for good upon the patient, intensified powerfully by the change of air and scene, and by the idea that it is a cure, so that we are not surprised when properly selected cases come back from this treatment improved in every way.

In our wards in the Infirmary we have few cases for such treatment. Our patients there are gathered mainly from among the horny-handed sons of toil, and they present too often the maximum of heart disease with the minimum of nerve irritability. In the patient, for example, whose case we have considered at the beginning of this lecture, the nerve compensation mechanisms, and the heart muscle, have for long been exercised and strained to their utmost, and he has come into hospital because these are both unfit to respond further to the calls that are being made upon them. For him, if life is to be prolonged, what is mainly required is more or less complete, and more or less permanent, nerve and physical rest.

NOTES ON FIVE YEARS OF MEDICAL MISSION WORK IN LOWER BENGAL

Read before the Edinburgh Medical Women's Club

By MARY H. SIMSON, L.R.C.P. & S.Ed.

I HAVE been asked to read a paper this evening on the above subject, and although I might have refused to do so on many grounds, chiefly on that of inability to produce anything worthy of the occasion, yet as I found myself rather in the position of a person who had but one choice, and "that the choice of

Hobson" (to quote a Bengali Babu), I think it better to submit gracefully, and only ask you to be lenient in your criticisms, remembering that I have for the last five years been far removed from this centre of light and learning, the city of Edinburgh.

Not only so, but I would ask you to bear in mind that the climate of Lower Bengal is not that of Scotland, and in course of time it inevitably produces its enervating effect both on the bodies and minds of all Europeans resident in that country. The pressure of our work at Ranaghat is very great, and even in spite of the best intentions and genuine efforts, I have to confess that scientific investigation and even medical reading find themselves pushed unceremoniously into the background to make room for more urgent or more important duties.

The climate has more to answer for, however, than merely interfering with the energies of the workers. It is a little damping to one's ardour to find, as one of our medical staff did when he took advantage of a slight lull in the work to begin a little microscopic work in connection with the malaria parasite theory, that the only oil immersion lens available was utterly useless, because of a fungus which had grown over its surface, and which could not be removed without sending the ens piece to England. I might multiply examples of this sort, but desist.

One other thing which must however be mentioned in this connection is the inability to have *post-mortem* examinations. I need not enlarge on the subject to demonstrate how seriously all medical research and progress in knowledge is hindered by this one thing alone.

We work in a district almost the most densely populated in India, the land of dense population.

The population is almost entirely a village one, there being only three or four large towns in the whole district. In our own sub-division of Ranaghat, which is thirty miles long, and about fifteen miles broad, there is only one large town, and the rest of the people live in about 1000 villages.

The centre of our Medical Mission is at Ranaghat, where there is a Dispensary and two Hospitals, one for men and one for women and children. There are also three branch Dis-

pensaries in the district, at an average distance of about ten miles from the centre station.

At these four Dispensaries last year, 32,024 patients made 63,231 attendances; and in the two Hospitals, 475 in-patients were treated.

Notes of Dispensary Work.

MALARIA.—As might be expected, this accounts for 70 per cent. or even more of the total number of cases treated.

So common is it that the people speak of it simply as "the illness," and "I am ill" means "I have fever."

The percentage varies (1) with the season of the year, being highest in the rains, and lowest at the end of the hot weather; and (2) with the kind of rainy season; falling in the drier years, and rising in the wet ones.

After the floods we experienced in 1900, there was a great outbreak of malaria all over the district.

We seldom see pure types of fever; generally the cases are mixed types, and usually these are benign forms of tertian and quartan fever.

As a rule, the people seem extraordinarily little affected by their fever, in comparison with the effect observed in Europeans who suffer from it. We frequently have men and women walking into the Dispensary with a temperature of 102° or 103°, and seeming very little disturbed thereby.

The treatment is summed up practically in one word—quinine. The vast majority of cases yield very quickly, many coming back cured after a few days' treatment.

We do not stint quinine, sometimes using more than 1 lb. of quin. sulph. on a big Dispensary day; and in consequence the people come in crowds, for they find that the medicine is efficacious.

Quinine is given steadily from the very beginning, regardless of temperature, and usually in the form of the sulphate, in an acid solution. Saline purgatives and hepatic stimulants form an important part of the treatment, and it is almost routine to begin with a dose of mag. sulph.

In cases complicated with pregnancy we still give quinine, finding the risk of abortion is less from the effects of the drug than from the effects of the fever. We usually combine it in

these cases with fairly large doses of acid. hydrobrom. dil., and have seen no bad results from the use of it.

Other drugs besides quinine are occasionally used, but come a very long way behind it in efficacy. Phenacetine is of use in some cases of obstinate high temperature, especially when given with caffeine.

Creosote applied externally, rubbed into the axilla, often brings down a very high temperature rapidly. It must be used with care, and in suitable cases only. Its effects are often very temporary.

In convalescence we give iron, arsenic, quinine, and the ordinary "tonics."

Prevention is undoubtedly better than cure; but the prevention of malaria by destroying the mosquito is unfortunately an absolutely hopeless task so far as our work in Lower Bengal is concerned. The people live in villages consisting of mud and thatch houses built under trees, and surrounded on all sides by rice fields, which for four months of the year are under water. Every village, or group of villages, has besides its *tank*, which during hot weather becomes simply a muddy pool. The houses are certainly not "mosquito proof," the thatch roof and the mud walls often do not meet. Under these conditions it seems absolutely impossible to hope that we could ever apply to the native population in India the measures necessary for the prevention of malaria.

SOME CONCOMITANTS AND SEQUELÆ OF MALARIA.—1. *Spleen.*—Enlargement of the spleen is almost universal. It is frequently unnecessary to descend to percussion or even palpation in the diagnosis of enlarged spleen; inspection is quite sufficient. The spleen often appears to fill the entire abdomen, and I have had to diagnose between an enlarged spleen and an ovarian tumour.

Remarks.—Anæmia is not a constant feature in these cases, though frequently present. There is generally no pain, and apparently very little inconvenience. We have not seen one case of rupture of the spleen during seven years of Dispensary work. Nearly every child brought to the Dispensary with fever has an enlarged spleen. The proportion of adults thus affected is much smaller. Does the enlargement disappear, or do the children die?

Treatment.—We combine iron with the quinine where splenic enlargement is present, and also give ergot internally. Iodine applied externally over the spleen gives good results, and the people themselves have great faith in this method of treatment. Some of the ideas current amongst the people regarding these enlarged spleens are rather interesting. One common belief is that if the "mouth" of the spleen (*i.e.* the notch) is directed *upwards* the patient's chances of recovery are good, but if *downwards* the case is very hopeless. Another almost universal idea is that it is very bad for any one suffering from enlarged spleen to drink milk.

2. *Liver.*—This organ is also frequently enlarged, but not to the same extent as the spleen. Slight jaundice is often present.

Acute hepatitis.—We see cases of this with symptoms almost like liver abscess; very acute pain, extreme tenderness and high temperature. The treatment we have found most efficacious is a large mustard and linseed poultice applied over the liver externally, and internal administration of ammon. chlor. and pot. iod.

3. *Neuritis.*—It is a disputed point whether this is a sequela of malaria or not. We had had cases of undoubted neuritis which have improved greatly under quinine.

4. *Malarial cachexia.*—We unfortunately see many cases of this, especially amongst the children. Patient is like a skeleton, covered with dry yellow skin; intense anæmia is the rule; often very foul and intractable diarrhœa; hair is thin, brittle and scanty; œdema of feet and legs very frequent. In children this often ends in a localised necrosis of the jaw, beginning round a tooth; or in a slow form of cancrum oris.

5. *Bright's disease* is an important and fairly common sequela of malaria, especially in children. It usually yields readily to treatment, especially if treated in hospital.

6. Two very frequent concomitants of malaria must be mentioned in these notes, because of the importance assigned to them by the natives.

(1) "Kora"—*i.e.* the xiphoid process of the sternum which has become prominent and slightly movable, probably from the enlargement of the spleen forcing

other organs forward. This is considered a sign of an *advanced* stage of malaria.

(2) "Pât"—*i.e.* a solid mass felt in the epigastrium which we take to be the enlarged left lobe of the liver, but which puzzled us all for some time. The people evidently consider it to be a separate organ.

Leaving malaria and its sequelæ, which form such a large proportion of the cases we meet with in the Dispensary, I must now mention a few of the other diseases we have to treat.

DYSENTERY.—We see very little *acute* dysentery on the whole; and we have not found ipecac. of very much use in those cases which we have treated in hospital. We have found the washing out of the lower bowel with warm boracic lotion, followed by an injection of starch and opium, to be of great use in relieving tenesmus and straining.

Of *Chronic* dysentery we see a good deal. In these cases we depend chiefly on castor oil emulsion and pulv. ipec. co. We have tried the treatment with magnes. sulph., but have not found it satisfactory. In fact, unless these cases are treated in hospital, the treatment is not satisfactory, as it seems impossible to impress the people with the importance of suitable diet, and curry and rice eaten in large quantities twice daily does not aid the recovery of a patient suffering from chronic dysentery.

LIVER ABSCESS.—As far as our experience goes, the connection between this and dysentery is not apparent. We have had between 20 and 30 cases (nearly all men), and in no case have we obtained a history of dysentery. All the cases treated in hospital have done very well with incision and drainage. The use of a large drainage tube, about 1 in. diameter, is important. Contrary to what one would expect, the prognosis seems to be more favourable when the abscess points in front than when it points behind.

SKIN DISEASES—*Leprosy* is fairly common, but we do not see the advanced cases that are found in leper asylums. We see most frequently the nodular form, with anæsthesia combined. One purely anæsthetic case which we admitted to

the women's hospital was greatly benefited by treatment with Chaulmoogra oil externally, and arsenic internally.

Tinea in various forms is met with, especially during the rainy season. We used to treat these cases with ung. sulph., but find ung. chrysarobin a much more efficacious, speedy, and consequently popular remedy.

Leucoderma is fairly frequent, and is as a rule very intractable. One case improved very much with hyd. perchlor. and pot. iod., but others show no improvement under this treatment.

Scabies, *psoriasis*, various forms of *eczema*, are all met with as at home.

We have seen one case of what we diagnosed as *ichthyosis*, but we had unfortunately no thyroid extract to administer.

GENERAL DISEASES.—Diseases of the circulatory, respiratory, and nervous systems are met with as in dispensaries at home, only it should be remarked that phthisis is not common, and organic heart affections are also rare.

GYNECOLOGY.—*Leucorrhœa* is fairly common, but is usually due to debility, and yields to general tonic treatment.

Displacements of the uterus are common, but the treatment of them is unsatisfactory unless the patients will consent to come into hospital, for so many of our dispensary patients come from such long distances that it is almost impossible for them to come regularly at short intervals.

Prolapse of the uterus is very common, especially amongst the older women.

Amenorrhœa is fairly common in young girls about sixteen, menstruation having usually begun about the age of nine or ten.

Dysmenorrhœa and menorrhagia are both uncommon.

Ovarian tumours and cysts are uncommon.

Cancer in all forms is very rarely seen, and I mention this here because the commonest form we see is epithelioma of the cervix.

MINOR SURGERY of all kinds is of course in great demand at the dispensary; and extracting teeth, opening abscesses, or removing "foreign bodies," in the shape of seeds, etc., from the

ears and noses of children, lend variety in the midst of scores of malaria patients.

EYE DISEASES furnish us with a fair proportion of dispensary cases.

Pterygium is common, and we treat it by dissecting off the pterygium and stitching it downwards under an incision made in the conjunctiva. The results of this method of treatment have been satisfactory.

Corneal ulcers in all stages and degrees are also very common.

Granular conjunctivitis is not common, and we do not meet with entropion, which seems of such frequent occurrence in other parts of India.

Night blindness is fairly common; we treat it with tonics.

Cataract is fairly frequent. Native practitioners treat it by the operation of *couching*, and we have had a goodly number of enucleations to perform, as a result of the above treatment.

Notes on Hospital Work.

I feel that it is unnecessary to enter into any details regarding the Hospital work at Ranaghat, as my paper has already taken up too much of your time in dealing with what is quite familiar to you; and with the addition of a large proportion of malaria cases, the medical and surgical work of the hospitals is very similar to that of a small general hospital at home.

Besides the work in the hospitals and dispensaries, we get a fair amount of obstetrical work in the villages. Practically all the cases to which we are called are abnormal, and one has to be prepared for any contingency. The low, thatched verandah of a mud hut in a Bengal village is not the place one would choose in which to perform obstetric operations, nor is the difficulty lessened by the fact that your patient lies on the floor. We have built a small room just outside our women's hospital in which to receive maternity cases, and we have managed to persuade some husbands to allow their wives to be treated there, but India, and especially village India, is conservative.

In conclusion, I must acknowledge my indebtedness to Dr and Mrs Neill, who have both assisted me greatly in the preparation of this paper, from their experience of the work in Ranaghat hospitals and dispensaries.

It only remains for me to thank you for having listened so patiently to what must have been, much of it, only too familiar by personal experience or reading. Much, too, must sound uninteresting, especially in the Dispensary work, of seeing so many hundreds of cases of simple malarial fever. I cannot claim for that part of the medical work that it is violently exciting or exhilarating. But what transforms the whole of the work, and lifts it out of the mere drudgery of routine, is the fact that every patient who passes through our dispensary, not only receives medicine for his or her bodily ailment, but also hears of Him, whom to know is Life Eternal.

DISCUSSION ON ALCOHOL

At the Edinburgh Medico-Chirurgical Society on 3rd July 1901

PROFESSOR WOODHEAD of Cambridge in opening the subject stated that when asked by the President to do so, he consented very gladly, because, firstly, he took a considerable personal interest in the question; secondly, because the President was equally interested; and thirdly, because he knew that, although they were not likely to all agree, there would be a good discussion. Knowing that he might be thought to take up what was considered by some to be an extreme attitude on the question, and realising that a man is much more easily convicted out of his own mouth than by any other means—especially when the subject was dealt with by those who could look at it from all points of view, it would be necessary for him to explain at the outset that what he had to say was rather of the nature of suggestion than any attempt to make very dogmatic statements. Many of them looked at the question from other standpoints than that occupied by him, and although they might not be able to convince one another, he thought that it was at any rate a good thing to have the matter discussed.

At the outset he thought they should endeavour to make the issue clear. They must arrive, if possible, at some agreement as to what category alcohol must come under. Was it to

be considered a poison, a drug, or a food? Or, if all three, as maintained by some, in which category does it play the most important rôle; as a food, or even as a drug, did it play anything like so prominent a part as it did as a poison? They would all agree that it was a narcotic poison; and also that it might act as a pathogenic agent—that it was, indeed, a protoplasm poison. To this he would return later. Was it a drug? Certainly it was—but he would ask, and would like to hear the opinions of those best qualified to speak on the matter, was it that panacea for every ill to which flesh is heir that it was sometimes said to be? He wanted to know definitely what the specific action of alcohol was, and how it was to be prescribed; and then he and a great number of others who had a strong feeling on the question would agree that it was a drug. The third question—Was alcohol a food, interested them greatly, because it appeared to him that it was when alcohol came to be looked upon as a food and not as a dangerous beverage that it became responsible for the greater part of the disorders that are ascribed to its action. Few physiologists denied nowadays that alcohol becomes oxidised in the body, and to that extent may supply a certain amount of heat; but no man had put forward alcohol as able to supply a sufficient number of calories for the proper maintenance of body heat. He believed the calculation had been made that the quantity of alcohol sufficient to supply the heat required would be a certainly fatal dose. There had been a good deal of discussion on this part of the question, and quite recently Dr John Madden had criticised Professor Waters' experiments on the food value of alcohol. He pointed out that it differed from fats and carbo-hydrates in that it was a violent protoplasmic poison, while they never exerted any toxic effect. In that way — even though it did supply a certain amount of the carbon element necessary—it could not be placed on the same footing as carbo-hydrates and fats.

There was also another important point bearing on this question in connection with Ehrlich's teaching on nutrition — which, of course, some accepted and some did not. The nutrition of the cell protoplasm appeared to result from the combination of certain proteid elements with the cells. For this combination to take place, certain bonds or links must be present, and without them there can be no application of these nutritive substances to the use of the cell. All these links appear to be connected with the nitrogenous element in the compound—consequently, unless these be present, nutrition cannot be effected. Alcohol did not contain this nitrogenous element. It entered into a combination with protoplasm, but in a different fashion to

the ordinary nutrient substances, and acted rather as a toxic agent than as a nutrient substance.

It was sometimes said that alcohol, if it did not act as a nutrient substance, might act as a respiratory food, and be converted into a reserve supply of fat on which the organism might call. Madden pointed out that there was no evidence of this, but that there was evidence, as shown by Miura, Welsh, and others, that in place of protecting the nitrogenous tissues from undue waste, alcohol actually hastened their waste, and it appeared to do this by its action as a protoplasm poison. The extraordinary avidity that alcohol, like phosphorus, appeared to have for oxygen might probably constitute one of the primary factors in certain forms of fatty degeneration. It might also explain the waste that took place in the nitrogenous tissues of some patients in whom there appears to be an abundant store of fat accumulated for the protection of the other tissues. Other nutrient substances were readily oxidised by the respiratory oygen provided by the hæmoglobin—they used up the oxygen that was most available, and when that supply was exhausted, then oxidation, so far as they were concerned, apparently no longer went on. In the case of alcohol there was a much more active process—it became oxidised under conditions in which the oxidation of fats and carbo-hydrates could not go on so readily, and, like phosphorus, appeared to divert to its own use oxygen which ought otherwise have been used in oxidising fats and carbo-hydrates.

In Madden's words: "It made the demand for oxygen so great that it could not be supplied by the normal process of respiration." Oxygen, to supply this demand, was therefore abstracted from the tissues, causing derangement of their function and metabolism. It interfered with the normal oxidation of carbo-hydrates and fats, and set up processes which resulted in a fatty degenerative change, which was best seen in the heart muscle, but which also took place in the walls of the blood vessels, in the walls of the intestine, and in the muscles of the other most active organs of the body. In all these cases owing to impairment of the nutrition of the protoplasm and imperfect oxidation that took place, secondary fibrous and calcareous changes were frequently associated with, and he believed directly due to, this peculiar action of alcohol. The readiness with which alcohol becomes oxidised rendered its use dangerous. These were the very features which characterised the products of many of the products of micro-organisms that induced disease, and in this respect they all resembled phosphorus, which, although readily oxidised in the tissues, was not to be looked upon as a substance useful in the animal economy.

Ehrlich had pointed out that the fact that proteid toxins are capable of combining with, and acting as nutrient substances, rendered their use dangerous.

In the case of alcohol there appeared to be the same degenerative action, but here the protoplasmic cells did not become accustomed to the poisonous action of the alcohol as they may to the action of proteid toxins. The process of immunisation against alcohol, however careful and prolonged the treatment, was only slightly, and then only apparently increased. The degenerations occurring as the result of a prolonged use of alcohol, afforded marked evidence that the tissues at any rate did not become immune to its action.

It was important to bear in mind that alcohol acted as a cumulative poison; and also that along with certain other poisons the effect was much more marked.

The peripheral neuritis resulting from a combined poison was much more marked than when the poisons were allowed to act separately—the tissues weakened by one being more readily affected by the other.

It was interesting to note that what had been suggested in the case of one set of poisons had been proved in connection with others in which experiments could be directly made. For some time past it had been recognised by those who are observing the action of alcohol most closely, that it is a predisposing cause of certain infective diseases. M'Leod and Miller, of Shanghai, in their interesting study of cholera, insist most strenuously on its rendering patients susceptible to this disease.

Then there were Abbot's experiments on erysipelas and suppuration, and also on the action of the bacillus coli. He found that the exhibition of alcohol produced an enormous increase of the susceptibility of rabbits to the action of these specific poisons; but not only did they show the effects of inoculation considerably earlier than non-alcoholised rabbits, but in the case of the streptococcus inoculation, the miliary abscesses appeared earlier, and were much more pronounced than in the case of non-alcoholised rabbits.

He (Abbot) pointed out the diminished resistance, and certain alterations in the tissues of which he was not able to give very definite evidence at the time. Since then, these tissue modifications had been more carefully studied, and it was known now that they were direct modifications.

These annual experiments were of considerable interest, and had been repeated under somewhat similar conditions in Calmette's laboratory at Lille. Dr Deléarde found that rabbits innoculated with anthrax were much more susceptible

if they first received a dose of alcohol. He found that it was almost impossible when giving alcohol to produce any high degree of immunity against anthrax, tetanus, or hydrophobia. He found that patients taking alcohol were much more difficult to treat than those who were not. Not only was there found to be a greater susceptibility to rabies in those taking alcohol, but the Pasteur treatment was much more successful in the non-alcoholic.

These experiments had been carried out with animals which had received large doses of alcohol.

He would now refer to the experiments of Laiknau, who had been working at the same subject, the results of which had since been published in the Proceedings of the Findland Academy, and were well worth careful consideration. Laiknau in his experiments used small doses of alcohol, such as were used as a nutrient substance or a medicament, or both, in the Sanatorium at Davos—from 40 to 60 cubic centimetres. Taking care to keep well within these quantities, and to use the alcohol in a sufficiently diluted form, he carried out a series of experiments on rabbits, dogs, fowls and pigeons. He used as his infecting material anthrax bacilli, Pasteur's premier vaccine, and for the more resistant animals a highly virulent culture. Tubercle bacilli were also used.

He took further as a poison the diphtheria toxin. There were some 500 or 600 experiments in all; and as a result of these it was found that alcohol, however given, even in these small doses, induced in the animal body a markedly increased susceptibility to artificial infection or to poisoning with the tubercle bacillus or the diphtheria toxin; he goes on to argue that the use of alcohol in the treatment of these complaints was not only useless but actually deleterious. The experiments had been carried out with the greatest care; and Professor Fränkel had gone into the matter, and was satisfied that the results were accurate. Most observers had come to the conclusion that the predisposing action of alcohol must be looked for in the production of abnormal conditions or pathological conditions of the nerves, alimentary canal, kidneys, liver, heart, vessels, etc. On the blood it also appeared to have some effect—its alkalinity was diminished—there was some leucopemia and a slight decrease in the bactericidal power of the blood. But what was more important, an increased susceptibility of the tissues to most infective agents. Going beyond the general question of infection it was pointed out that these experiments proved that pregnant animals and their offspring are markedly affected and devitalised by the continued use of small doses. Normal temperature and that of disease were temporarily slightly lowered; and it appeared

that it was during this lowering of temperature that we had the most favourable moment for the invasion of infective agents.

Let them consider the relation of alcohol to phthisis. They had direct evidence that alcohol predisposed to infection; and if that was true as regards primary infection, could it be less true as regards secondary or continued infection. The extension of tuberculosis was merely the infection of other tissues, and if alcohol increased susceptibility or interfered with the production of immunity which they were constantly trying to produce, could it be a useful agent or one that they could use without being very well satisfied as to the beneficial result to be obtained. Beyond this was another fact, alcohol insisted on being oxidised when it got into the body, and in this way there was a marked interference with the respiratory process and with normal oxidation. This must be a most serious factor in bringing about the accumulation of fat in the liver, and setting up fatty degeneration in this and other important organs, conditions so frequently found in phthisis.

Referring to pathological changes, the fatty and fibrous changes produced by alcohol were not confined to the liver, though most frequently associated with that organ. As to changes found in the heart he need not say much, as most of those present would have read Mitchell Bruce's article in which he says that there are undoubtedly certain conditions, especially those associated with dilatation, which are directly the result of alcoholism. Many observations in the *post-mortem* room had led him to come to very much the same conclusions. He referred to two cases in which there was myocarditis to a marked degree. In one case the cloudy swelling was accompanied by a peculiar hyaline degeneration in certain fibres. There were numerous cells between the muscle fibres and an increase in the fibrous tissue between the bundles; sometimes distinct atrophy could be observed.

But the heart appeared to be affected long before any change could be made out in its tissues. For proof of this they must refer to the physiologist — the systolic output was rendered incomplete; there was an increase of diastolic pressure, and a tendency to dilatation.

Perhaps the best tissue of all in which to study the action of alcohol was the protoplasm of the nerve cell. He had no doubt they would hear from some of those present of the enormous importance of this study of nerve cells in enabling them to determine the direct action of alcohol upon the tissues. Alcohol was only one of a large group of substances which might exert a definite action upon these cells. Antipyrin, cocaine, strychnine,

and the toxins of rabies, tetanus, etc., acted in very much the same way.

Dehio carried out a series of experiments on the influence of acute alcohol poisoning on nerve cells, which had subsequently been repeated by Colin Stewart, in which it was found that when alcohol was injected subcutaneously in sufficient quantities to produce acute alcoholism, Nissl's granules gradually disappeared, and the protoplasm, instead of remaining clear, became slightly stained with the reagents used. This was found not only in the cortical brain cells, but also in the cells of Purkinge and in the multipolar cells of the spinal cord. It appeared to occur in cells of the nerve centres throughout. A series of other changes had been described in which the fine ramifying processes of the cells became markedly altered, and in most cases very much broken up, shortened, and thickened. There appeared to result from this a loss of communication between neighbouring cells. If this could be traced out more carefully there was no doubt that in time they would come to make out the direct action of alcohol on these cells. He would not go into the other changes which took place, but would simply mention that here was apparently a basis upon which they might work, and from the study of which they might find out very much more than was yet known about the action of alcohol.

There were one or two other points which he should like to mention before closing. The most important was that there was in acute alcohol poisoning evidence of very marked changes in connection with the thermogenic and thermo-regulatory systems. He had tried to find out what were the lowest recorded temperatures in animals, and found that in the normal rabbit the temperature when it is exposed to cold was reduced by only something like three degrees; but when alcohol was administered it was possible to bring down the temperature from 38·8° C. to 19·8° C. This was certainly an exceedingly important point. In the same way it was very easy to bring down the temperature of guinea-pigs ten degrees if alcohol was administered before exposing them to cold.

Probably during the discussion a number of other points would be raised, but for the present he would like to insist that in looking at the question of alcohol and its use in disease they were not justified in throwing aside entirely the results of experiments carried out with doses of alcohol which are not sufficient to produce intoxication, but were in proportion to those given every day to patients, and which went to show that whenever a virus produces a disease it acts more certainly and readily in an alcoholised than in a normal animal; when

it was attempted to produce immunity in an alcoholised animal one failed in many cases absolutely; it was certainly always more difficult to produce it than in the normal animal.

PROFESSOR T. R. FRASER said — I regard it as a great privilege to be asked to take part in the consideration of this subject, and to be permitted to join with other members of this Society in showing our appreciation of the kindness of our friend Dr Woodhead in coming here to-night to express his views on a subject to which he has given much attention, and which is always one of great interest.

Notwithstanding that so much has been written and said on the subject of alcohol, and from many standpoints, as that of the pharmacologist, the physician, and the social reformer, I am sure I shall have your approval, Sir, and that of everyone present, when I say that we have listened to Dr Woodhead's paper with the keenest interest, and that, whether we coincide with or differ from any of the statements and conclusions he has advanced, we are at one in admitting the ability of his exposition.

That there should be differences of opinion is only to be expected, when we recollect that this substance, alcohol, is by some held to be of the highest value, by others of no value, and by still others to possess interest only as a poison.

This last quality must be fully and unreservedly recognised; but it does not exclude the existence of value in several directions, such as the therapeutical and even the social. The toxic properties after all are merely those which are to be placed in the same category as the properties of 60 mins. of croton oil when contrasted with those of 1 min.; or of 10 lbs. of beef steak when contrasted with 1 lb. The knowledge of the effects of the larger quantities is of much value in warning us against administering them, but it is obviously of no value in indicating the great medicinal and food benefits which may be obtained from the smaller quantities.

I cannot help thinking that some of the confusion in statements, and much of the difference of opinion regarding the value of alcohol, may be explained by insufficient discrimination of the effect of different quantities, by want of sufficient attention to the all-important question in pharmacology, and therefore in therapeutics, of quantity or dose. According to the dose, alcohol, for instance, may be regarded as a paralyser of the circulation or as a stimulator of it; as a hurtful or a beneficial agent in primary digestion; as a food substance to be treasured and used with trustful discrimination in emergencies, or only as a disreputable poison to be shunned by all self-respecting persons.

As I have thus incidentally referred to three actions which alcohol is claimed to exert, which from the standpoint of the medical practitioner are the most important, they may be used as illustrations of the great importance of clearly distinguishing between the effects of small as contrasted with large quantities; and by a large quantity I mean not only a single large administration, but also a continuous administration over a considerable interval of time of a succession of single small or moderate doses.

The first of these actions, that upon the circulation, probably constitutes the foundation of the very frequent application of alcohol as a so-called stimulant. Is this application justifiable? Were we only to have regard to the effects of large administrations the answer would undoubtedly be in the negative. When, however, we have regard to the changes in the circulation following the absorption of relative small quantities, I believe that the experimental evidence is absolutely in confirmation of its frequent therapeutic use.

Such quantities, by a direct action on the heart, undoubtedly increase the rate and force of its contractions. It is a very rapidly absorbed substance, and, therefore, the effects are quickly produced, though they are not very lasting. Further, as I and others have convinced ourselves, this stimulant action may be produced in a healthy person if excessive quantities be avoided without the slightest evidence being obtained of an after weakening or paralysing action on the heart. The heart merely returns to the former standard of its activity.

Not only is the circulation stimulated by this direct action on the heart, but it is stimulated also by an action on the blood-vessels. Quantities sufficient to increase the rapidity and energy of the heart's contractions also slightly and temporarily contract the blood-vessels, and if the quantities are increased only a little more the heart contracts still more effectively, but the blood-vessels dilate; and thus the distribution of blood is accelerated and widened, and the functions of many organs and structures are increased. There is produced not only a stimulation of the circulation, but a stimulation so widely extended that alcohol, more than almost any substance, may, though in somewhat inexact language, be regarded as a general stimulant.

The gain to therapeutics of this action alone is obvious, not only where the heart is weak, but also where the blood distribution is imperfect; and it not only itself justifies completely the inclusion of alcohol among our therapeutic resources, but, I venture to think, reduces the usefulness of the medical practitioner who refrains from using alcohol in such circumstances as I have indicated.

If we now turn to the second action I have mentioned, that on digestion, it may again be stated that large quantities paralyse digestion; but, on the other hand, that small quantities improve digestion.

Such quantities increase the flow of saliva without impairing its digestive properties; they augment the secretion of gastric juice, and actually enhance its peptonising power; they greatly stimulate the peristaltic movements of the stomach, and so increase the efficacy of the abundantly secreted pepsin and acid; and they apparently cause leucocytosis, and may thus further the carriage to all parts of the body of albumin, which has been absorbed into the lymph spaces in the stomach walls, very much in the same way as the red cells distribute oxygen widely; and thus both primary digestion and nutrition are improved.

In regard to the direct effects on nutrition of absorbed alcohol, the proposition may without hesitation be stated that large quantities impair or suspend it, probably by paralysing the activities of all cells in the body. On the other hand, small quantities further nutrition and serve the purposes of food by supplying the body with energy.

Again I must content myself with stating conclusions without attempting to describe fully the experimental and other data on which they are founded.

I would remind you that after the injestion of such quantities as are useful, only an insignificant percentage is eliminated unchanged from the body and that oxygen absorption and carbonic acid elimination are increased. Either or both of these facts is sufficient to show that alcohol is consumed in the body within certain limits, and, if consumed, it must of course evolve energy which supplies force, and so alcohol acts as a food. Its food value, roughly, is equivalent to that of an equal weight of a fat such as butter, and while it appears incapable of modifying the nitrogenous metabolism, it can replace carbo-hydrates and economise the fats of the body.

As a food, further, it has the advantages in disease of making no demands on primary digestion, and of being very rapidly absorbed and diffused. But these are not the only facts in support of the proposition that it has some value as a nutritive substance. It has also been shown to be capable of maintaining the equilibrium of nutrition in normal persons purposely restricted to an insufficient dietary; and there is much clinical experience that it can do so, for short periods of time, in conditions of disease, when both primary and ultimate digestion are paralysed and impaired.

At the same time, I fully concede that in healthy conditions,

alcohol is a wasteful and expensive food and one attended with moral dangers. In conditions of disease, however, where the stomach is unable to retain or to digest other foods, it may be, and every day is, used as a nutriment, and is then found capable of easy absorption, without any process of digestion being required, and capable of sustaining life for brief periods, not only because it supplies energy, but also because it stimulates a flagging and a failing circulation sufficiently to allow blood to be conveyed to expiring organs and tissues.

In many of these urgent conditions, another action to which I have not made any reference, that on body temperature, is often produced with much advantage. The temperature is reduced by moderate doses because of increased heat dissipation and radiation from the body, and by large doses, to a still greater degree, because such doses not only further heat dissipation, but also reduce the activities of probably all the cells of the body. It is thus an antipyretic, and clinical experience has produced evidence in favour of alcohol in many stages of fever.

There is another action of first importance, that on the central nervous system, which I purposely refrain from discussing, as I know it will adequately be considered by Dr Clouston, who is to follow me.

I have said enough, however, to show that alcohol possesses a singular number of actions of value in disease. There is not generally only one problem, but several problems before us when we treat a patient. It is sometimes the cardiac feebleness. It is sometimes the impaired digestion. It is less frequently the requirement to sustain life over a grave crisis, and even in that circumstance we may succeed in preventing death, not only by stimulating the circulation, but also, I feel assured, by liberating the energy produced by the combustion of alcohol when it is administered as a food.

Before I sit down, let me add, in reference to Dr Woodhead's remark that there exists a certain amount of experimental evidence that alcohol increases the infectivity and virulence of pathogenic organisms, that this action does not appear to be a powerful one, at least in the absence of extreme immoderation in the use of alcohol. I have had occasion to consider the incidence and mortality from the infective disease, plague, now raging as an epidemic in India. The Natives of that country, who by religion and circumstances are largely abstainers from alcohol, have shown a case-mortality in the Bombay Presidency of nearly eighty per cent., and in some places in India of even upwards of ninety per cent. On the other hand, the case-mortality has been only about twenty-nine per cent. among Europeans in the Bombay Presidency, although they use alcohol as commonly

as Europeans elsewhere. In the recent outbreak in Glasgow, where the cases occurred for the most part among those living in the insanitary districts of that city, where immoderate indulgence in alcohol is only too prevalent, the case-mortality was only twenty-eight per cent., or much the same as that of the European in India. It is to be noted, further, that the evidence points to the fact that the strong and well-fed are as susceptible to the disease as the weakly and under-fed, and therefore that the relative immunity of Europeans in India, no more than the liability of the Europeans in the poorer districts of Glasgow, cannot be explained by physical strength or good feeding. I do not, of course, draw the inference that alcohol exerts a protecting influence, but only, as I have already said, that if, in any circumstances, it increases liability, its power of doing so can only be insignificant.

DR CLOUSTON—In regard to the effect of alcohol upon the higher nervous system, one fact is now quite recognised, which is that in the production of the most serious of all nervous diseases—mental disease—alcohol stands as the highest of all exciting causes, being responsible for from 20 to 25 per cent. This by itself would be a very grave fact, but a statement of this kind required some explanation in order that it might not be misinterpreted. When they considered the neuropathic brain, which in the vast majority of cases was the real and original producing cause of mental disease, it would be recognised that if alcohol did not act as a cause, a great many other causes might come in to upset the mental balance; also, this taking to alcohol in excess was in many cases a symptom rather than a cause. There were facts which showed this very well. In certain counties in England there was a good deal of quiet beer drinking, and where spirit drinking did not prevail. In these counties alcohol was put down as a factor in the causation of insanity to a much less extent, and yet they produced as many lunatics as did Edinburgh. Another extraordinary fact was that the Society of Friends was the most sober and self-restrained of all sects, yet mental disease prevails to as large an extent amongst that Society as amongst the general population. The Quakers, no doubt, have inbred to a large extent, but these facts show that the figures as to alcohol must be conditioned in many ways. When they considered the quality of brain on which alcohol has the most pleasant and fascinating effect, they found it was that brain in which the first action of alcohol is to diminish the great mental quality of inhibition, and at the same time to arouse intense desire. They found that many such brains were the most sensitive of all human brains—and this covered

the whole field of the poetic and artistic tribe. On this quality of brain alcohol was the most potent and destructive of any toxin that could be applied. There was no doubt of the intense pleasure which alcohol caused to such brains; and he hoped that they had all to some slight extent the sensitiveness which made men capable of such enjoyment. Dr Woodhead might say this was all very well—that while alcohol was producing this intense enjoyment, it was no less exerting its destructive influence. There was no doubt, he feared, that human nature being what it was, the balance of choice would always tend towards pleasure, and towards raising an ideal in life, and so long as no destructively evil effects resulted—that is, so long as a reasonable moderation was practised—the ethical sense of mankind was not disturbed. This was a side of the question too little taken into consideration by those who point out the evil effects of alcohol.

In regard to the psychological action of alcohol, a number of experiments of a most careful kind had lately been made by Professor Kraepelin. German students were tested in a scientific way as to certain mental powers and reactions before and after they had fixed doses of German beer. There was no doubt that the full effect of small doses was to liberate energy. On the higher brain cells there was a certain katabolic effect, and this was accompanied by a mental or emotional pleasure; but, at the same time, the cognitive and reasoning output was undoubtedly of a poor sort—it was not so good in quality and accuracy as if cell katabolism had taken place in a normal manner. Larger doses resulted in a slower and worse output all round. But there was one very important result which they could not too constantly keep in mind. It was found that in these experiments, that after these students had thus taken alcohol for a few days and then stopped its use, it had a much greater effect, in the same direction, when resumed. The more confused quality of output was then produced with only half the dose of alcohol that acted before. This was entirely consistent with experience. They knew that after the drunkard had become addicted to the intemperate use of alcohol, it produced its effect more easily. Some molecular change in the brain cells was left, through which they were more irritable and explosive.

They had had Royal Commissions on many subjects, and it seemed rather extraordinary to him that, so far as he knew, no scientific commission of experts had been ever appointed to investigate this great medical and social question from a purely scientific point of view. It affected the general health of the community, and was certainly worth inquiring into. There was no doubt that, speaking generally, those unaccustomed to weigh

the value of experiments were confused between the statements made by the total abstainers on the one hand, with the enormous body of facts which they have at their back, and by the statements made by those who considered the moderate use of alcohol legitimate, on the other. He believed that such a commission might, with our latest knowledge of the effects of alcohol on mental disease, on nervous function, on general disease, and on social and economic questions, lead to very valuable results. He could not conceive a better outcome of the discussion than that their chairman should take steps to induce those in power thus to look into this question.

There was another practical question to which he would refer. In the treatment of admitted alcoholics they all knew that one of the great difficulties is that the patients cannot help in their treatment sufficiently themselves; and they all knew that some legislative help was needed in these cases to enable us to treat them effectually. Should not the whole profession urge that such a legislative measure is needed? Surely this would not be too much for the legislature to grant.

Lastly, he would be very sorry to sit down without saying that, as a result of his own experience, the effect of the excessive use of alcohol on the higher functions of the brain is an extremely terrible one. Taking a broad view of the customs of society, of the prevalence of the neurotic or neuropathic brain, and of the extraordinary prevalence of the ignorant abuse of alcohol, he thought that they, as medical men, should endeavour to make their opinion felt by the public; and that as a profession, by an emphatic and general expression of their opinion, they should show that the excessive use of alcohol was one of the most terrible ailments of modern society; and that more especially was it harmful in our city life. He believed that such a pronouncement, which should be reiterated at stated intervals, would do a great deal of good.

DR AFFLECK might be regarded as one having strong views upon the question, which he thought had been tested by experience. His opinion in respect to the administration of alcohol was that while he should not like to be without it, it should be regarded very much as an emergency remedy. Though the statements made by Professor Fraser were very interesting, he thought they were rather dogmatic and some of them open to serious question. With regard to his remarks about the relative immunity from plague of those who took drink, he would ask Professor Fraser, when he gets a case of pneumonia into his ward and is told that the man is a drunkard, if his prognosis is not a very serious one. He would often find that

the patient died, not from the extent of lung involved, but from the overwhelming character of the poison he had imbibed—his chronic alcoholism put him in an unfavourable position for fighting the disease. Alcohol had been very much used in the treatment of pneumonia, and had been recommended to be given in very large quantities; and while he did not deny that it had its uses, he had been grievously disappointed in regard to it. He had rarely seen a patient assuming a serious condition who was benefited by the large doses recommended to be given. With regard to the use of alcohol in other than emergency cases —as an aid to digestion for instance—he thought a terrible danger lay there which they should not fail to recognise. What Professor Fraser had said about its action might be true; but if it had to be called into use every day was it likely that its alleged good effects would continue for a length of time; and even granted that it did exert a beneficial effect might it not be too dearly purchased by producing tissue changes in the body which would make themselves manifest in the later period of life. He thought the evidence of *post-mortem* rooms would bear him out that the effect of habitual small doses was very often disastrous. In conclusion he would say that he felt himself more and more chary in ordering alcohol—he felt a great sense of responsibility in ordering it knowing how dangerous a thing it was, and they could not dissociate the moral aspect from the medical aspect of this question. There was no remedy which was so frequently suggested to medical men—they were invited and even coerced into ordering it. This was a terrible temptation to young practitioners, and it required a pretty strong man sometimes to say to patients' friends that they would be better without alcohol at all. He held that unless the practitioner conscientiously believes that the patient needs alcohol he should not order it.

DR W. LESLIE MACKENZIE considered the public health aspects of the question, and asked :—

1. *How is Alcohol related to Public Health?*

In two ways: first, directly as a factor in the ordinary food environment; second, indirectly as a factor in the moving equilibrium of the social organism. In its direct action, it may produce a series of fatal diseases; it increases the fatality of many other diseases; it predisposes to some. Predisposition and fatality are alike preventable, because both are due to a removable cause. In its indirect action, it lessens the sense of social responsibility in every grade, from the family upwards to the race; it tends to generate neglect of routine; it thereby

impedes the course of social development; it predisposes its victims to satisfaction with a lower standard of living; it may produce economic inefficiency; it thus generates a lower standard of comfort, and a lower standard of cleanliness; it ends in aggravating the conditions that foster many of the communicable, and many of the non-communicable, diseases. Doubtless, there are many counteractives. What I have said is true mainly of those persons only that, under stress of bad economic conditions, exceed in their consumpt the commonly accepted normal of two ounces of absolute alcohol in the twenty-four hours. But in lesser degrees, down to the consumers of a small undefined amount, the same propositions are more or less true. But at the lowest end of the social scale, as at the highest, there are counteractives. When alcohol has exhausted the drinker's money and credit, it conducts him to the poorhouse, where he becomes as sober and almost as useless as he formerly was drunk and incapable. His family, too, are more or less well guarded from disease, and moderately well nurtured into efficiency. At the highest end of the social scale, the counteractives are better food and the good offices of friends. Both by the segregation of the lower and the protection of the higher victims, the death-roll is every year robbed of a few names. And there is something positive to say for the four-ounce-a-day drinker. He lives in a state of persistent mental erethism; he is never drunk; but he suffers from slight disturbance of perceptions; he exaggerates the facts favourable to him; he does not appreciate the facts against him; he spends his business days in a state of mildly exalted feeling, of which the mathematical limit is universal defiance or fighting-fitness. To men in this erethistic condition, life is less of a worry than to the absolutely sober; the wear and tear from alcohol is more, but the wear and tear from circumstances is less, and we must, I think, allow something positive for the habitual inconsequence of such a life. My observation of many classes of men in Leith has tended to confirm this suggestion. It is worth noting, though it may be a pure accident, that while "Edinburgh has one licensed house to every 378 inhabitants, Glasgow one to every 401 inhabitants, Paisley one to every 392, Dundee one to every 369, Aberdeen one to every 367, and Greenock one to every 358," Leith, whose death-rate is notoriously lower than the death-rate of the others, has yet one licensed house to every 274 inhabitants. (Rowntree & Sherwell, Pop. Ed., p 29.)

I have stated the case in the most abstract way; and it is impossible to exhaust even a small part of the diseases correlated with alcohol. I confine myself to the connection of alcohol with the infections.

2. *Does Alcohol Predispose to Infection?*

This question cannot be answered by a simple "yes" or "no."

Infectious diseases are, for the most part, diseases of early life, when alcohol as a factor is practically of no account whatever. Diphtheria, scarlet fever, measles, whooping-cough, chicken-pox, mumps, German measles, belong predominantly to the non-alcoholic ages. It is possible that the use of alcohol in their treatment may do more harm than good—that is a matter for clinical investigation; but it is certain that alcohol has no direct part in predisposing the constitution to them. The soberest child born may at any moment take any of them. And I am not aware of any proof that the children of mothers alcoholised during pregnancy are any more susceptible than others. It may, I think, be taken as established that, with a small exception for idiosyncrasy, all children are, in greater or less degree, susceptible to the diseases named. Alcohol, therefore, as a predisposing factor may be excluded.

Is the same true of the other major infections? I think, on the whole, it is. Enteric fever, small-pox, typhus fever, erysipelas, septicæmia, pyæmia, croupous pneumonia, cholera, plague, yellow fever, malaria, beri-beri, tuberculosis, syphilis, and some others are—given the necessary exposure—as, with one or two exceptions, ready to attack the non-alcoholised as the alcoholised. One cannot say that, as a directly predisposing factor, alcohol plays any special part. It is at once admitted that, where there has been alcoholic excess, or persistent alcoholising without special excess, the prognosis is bad, particularly in pneumonia, typhus fever, and perhaps in the many varieties of septic disease. But with these exceptions I do not think it can be shown that alcohol plays any considerable part either in creating a predisposition to them or in increasing the total mortality from them. All that we can safely say is: Given a bad alcoholic history, the case mortality in certain infections will be higher. But against this we have to say also that a bad alcoholic history is not generally established until after 40 or 45, and then the physiological susceptibility to most infections is less; the exposure to them is, as a rule, less, and in many indirect ways the organism is better guarded.

To take, now, one or two diseases individually.

Typhus.—Typhus is not specially a disease of the alcoholic, but it is certainly more fatal in those of alcoholic history. Is this a hygienic loss or a hygienic gain? It is both according to the standpoint. If we wish to preserve the alcoholic, it is a loss; if we wish to eliminate him, it is a gain. In neither

case does alcoholism affect the spread of the disease, and that is the cardinal fact for preventive medicine. But typhus has itself been practically eliminated from Britain at least. Consequently, its contribution to the death-rate has ceased to be important.

Cholera.—The broad fact that cholera prevails in India among races that consume practically no alcohol, and does not prevail specially in Western European countries where alcohol forms an ordinary article of diet, is enough to justify us in discarding alcohol either as a predisposing factor or as seriously increasing the case death-rate. In certain parts of Russia cholera is practically endemic, and alcoholic excess is very common; but the prevalence of the disease may be due as much to economic conditions as to alcoholic excesses. Not that in cholera a bad alcoholic history is other than unfavourable; but cholera does not so discriminate between the ordinary four-ouncer and the under-two-ouncer as to make an appreciable difference in the comparative totals.

Plague.—The same argument applies to plague. At no stage can it be said seriously to be influenced by alcohol. It attacks non-alcoholic races equally with the alcoholic.

Croupous Pneumonia.—Here probably alcohol predisposes both directly and indirectly; it certainly affects for the worse the prognosis. Pneumonia would, of the microbic diseases, probably profit most by the abolition of alcohol from the environment. The other infections would not benefit much directly by the abolition of alcohol. This is to say that, so far as infection generally is concerned, the abolition of alcohol is not, to any appreciable extent, a direct preventive. An indirect preventive it certainly would be, for we have overwhelming evidence that the absence of alcohol means improved social efficiency, and, within limits, improved economic conditions, and these in turn coincide with an improved standard of health, and consequently with an improved sanitary environment — less overcrowding, better nutrition, and greater cleanliness. When I say "within limits," I mean to indicate my belief that alcohol is in part a cause, but in part also a consequence, and although the more sober nations are likely to out-distance the less sober in the production of wealth and in elaborating the methods of its distribution, the total abolition of alcohol, or the total cessation of drunkenness, will leave untouched the fundamental economic problems of our time.

3. *Is Alcohol in some degree a necessary and indispensable part of the food environment?*

This question may be more exactly put—Is alcohol, like water, or certain salts, a specific supply of a specific organic

demand? Can a race exist without it? Is there a "craving" for alcohol as there is a craving for water?

Dr Archdall Reid maintains that there is; but the evidence he adduces is not to my mind conclusive. His argument that abstinence from alcohol permits the survival of a greater number born with this "craving" appears sound enough, if this "craving" be first demonstrated as a fact. What unquestionably, however, is true is that abstinence from alcohol increases an individual's susceptibility to alcoholic poisoning. The total abstainer, with a small exception for idiosyncrasy, answers always to a glass of whisky, and usually to much less. Consequently, it may be allowed that widespread abstinence creates in each generation, quite apart from questions of inherited diathesis, a large proportion of persons that are easily made drunk. It follows that a smaller consumpt per head will mean a larger percentage of temporary intoxications. This is seen in the six-monthly experiments of our rural fairs, where a very little whisky serves to line the roadside with young men drunk. I am inclined to explain in the same way part of the increased police returns. It may be that an increase of drunks and incapables is an indication of the gradual supersession of chronic soaking. The chronic drinker is not usually incapable enough to come before the police magistrate.

But this increased susceptibility induced by abstinence does not imply the creation of a craving. And even if it did, it is illegitimate to assume that such a craving is not amenable to any but a specific satisfaction. The acquired appetite induced by the use of a drug is a well-known condition; but it requires more proof than I have yet seen to show that alcohol specifically satisfies any primary organic appetite. The existence of the non-alcoholic races is alone enough to cast a doubt on the whole theory.

But if there be no primary appetite, alcohol cannot be said to be a necessary and indispensable part of the food environment. The transmission as such to the child of an appetite acquired by the father is an unproved assumption; the passage of alcohol from the parent directly to the germ is physiologically possible, but it has not, so far as I am aware, been shown definitely to generate a congenital specific craving in the child, however much it may disturb the development; the passage of alcohol from the mother to the fœtus may make the fœtus drunk from time to time, and so initiate a congenital craving, and this is all that the facts require. It is a question for proof whether such a specific craving is ever congenital. That this craving, acquired *in utero*, is transmitted to the third generation without alcoholic indulgence by the middle host, needs a vast amount of proving.

Each generation has to take care of itself, and I am not much moved by such possible dangers to posterity as the creation of more susceptibles is supposed to entail. History is strewn with discredited forecasts, and our knowledge of social laws is too elementary to make dogmatic prophecy other than unprofitable.

4. *What can the Public Health Organisations do to prevent the evil effects of Alcohol?*

Through the Food and Drugs Acts, they can exercise a certain very rough control over the quality of the alcohol sold for general consumption. That beer should not contain arsenic is certainly a gain; but is it equally a gain that whisky should not contain water? From what I have seen and know of the *Food and Drugs Acts*, I doubt whether, even if applied persistently and stringently, as in many places they are, they would to any appreciable extent lessen the evils even of bad whisky—whether by "bad" we mean over-watered or adulterated.

For the prevention of open drunkenness, the magistracies can do something. Leith, once more, has shown some good results. But these results are results for decency, not for public health. The stopping of open drunkenness will not much affect the production of acute alcoholism, diseased livers, and shattered nervous systems.

For the present, the Local Authorities for Public Health Administration have very few points of direct contact with the trade in alcohol. Legally they do not have any, and I do not think it would be much advantage if they had. The alcohol question is so much more than a question of public health that the little a Public Health Administration could do directly is better done by other organisations. Indirectly, the Local Authorities can do something, they can help to improve the housing of the labouring classes, and thus by improving the environment they can do something to harden the rising generation.

They could also do something for the food supply. They could collect, purify, and distribute milk. They could organise public services for the day nursing of infants, and so lessen the overwhelming home-burdens that too often drive the mothers to alcohol. They could institute wash-houses, which would relieve the home and improve its amenity. They could—and do—organise amusements; but of the ultimate benefits of the amusements organised, I have grave doubts. They are not always unassociated with alcohol; they encourage the scattering of attention on trivialities; and, for my own part, I do not

believe that amusements of the gregarious order, where a man goes with men and leaves his wife to drudge at home, do much either to drain the alcoholic swamp or to strengthen men to wade through it. And for the dangerous ages—the climacterics of man and woman—amusements do nothing but evil. Indeed I am inclined to echo Sir George Cornewall Lewis's epigram: "Life would be tolerable but for its amusements."

Note.—Dr Archdall Reid has recently somewhat modified the extreme position referred to above.

DR JAMES RITCHIE thought that what they wanted was facts—facts pathological and physiological—not that he objected at all to laboratory experiments, some of which had great value. But laboratory experiments were conducted under peculiar influences, and were often surrounded by circumstances which did not occur in nature; and if they could get examples conducted under natural conditions and over a sufficiently wide area, facts deduced from these would be of much greater value. Now it so happened that some Life Insurance Companies had been in existence for a long time, and the results of their investigations were carefully prepared and tabulated. These companies found that those who dealt much in alcohol were very bad lives. They found that the large extra rate of 20s. per cent. charged in the case of those dealing in alcohol was not sufficient. There were, however, certain companies which had two classes of risks—non-abstainers and total abstainers. The Sceptre Insurance Company was one of these, and recently made an investigation into the results of their work for sixteen years, up to 1899. They found that on the general side they had a slightly smaller number of deaths than the anticipation; but on the total abstainers' side they had 23 per cent. fewer than on the general side. The United Kingdom Temperance and General Insurance Company, which has a similar classification, had made investigations, and their experience was at each investigation somewhat similar, viz., on the general side—and of course the companies are particular about the habits of those they insure—the death-rate was 1½ per cent. below the expected rate; while on the total abstainers' side it was 26 per cent. less. He thought these were facts well worthy of consideration. There was another comparison. Among the working classes Industrial Insurance Companies insure also against sickness and accident; and it was found that among the Society of Foresters, who are not necessarily abstainers, there was three and a half times as much sickness per annum as among the Rechabites, who are total abstainers. Although the directors of insurance companies are not necessarily total abstainers, for policies which cover the

risk of accident they take from total abstainers 10 per cent. smaller premiums than from non-abstainers. He was bound to conclude that, so far as duration of life was concerned, and so far as liability to sickness or accident was concerned, total abstainers are better lives than those who are supposed to take alcohol even in moderation. These were facts; but he might also allude to his own experience. In relation to gout, he believed that alcohol so modified processes going on in the body that it predisposed to gout, and that the gouty patient was very much better without alcohol at all. The text-books were at one upon this point he thought, but he questioned very much if medical men were not afraid to communicate this opinion to their patients. In regard to rheumatism, his experience was precisely similar. He believed that alcohol predisposed especially to chronic rheumatism. In relation to heart troubles, he thought that perhaps they got the best idea from cases of acute general dilatation; also from cases of chronic dilatation due to failure of compensation. He never gave alcohol to these cases; even when they had been in the habit of taking it, he immediately stopped the alcohol and put them to rest. He believed that not only was alcohol unnecessary in these cases, but that it was a distinct evil. Professor Fraser had said that in small quantities alcohol stimulated the heart, and explained also its action in dilating the capillaries. This was also his own experience. But, on the other hand, he found that there was an exactly similar depression after. And what was the patient's experience? After a short time he desired another dose of stimulant, and with a feeble heart he went on stimulating at intervals with unfavourable results. He quite acknowledged that one might get distinct benefit by giving small doses of alcohol when there was a high tension pulse, but he believed one could do very much better by means of other remedies, and that alcohol should be kept for cases of emergency.

DR P. A. YOUNG showed some diagrams containing the results of the experience of the Sceptre Insurance Company in respect of its two classes of insurers—non-abstaining and total abstaining. This had been already alluded to by Dr Ritchie. He pointed out also the difference in death-rate between the Rechabites and Forresters, two societies drawn from the same stratum of the population—the industrial working-man—and who were very probably gaining about the same wage and had the same environment, except that the Rechabite was a total abstainer and the Forrester need not be. At age twenty-five the death-rate was for the Rechabites five per thousand, and for

the Forresters seven and a half per thousand, and a similar difference existed at other ages. It was also shown by the table that the Rechabite death-rate was lower than the average experience of twenty of the best British Insurance Companies, who, of course, always exclude drunkards.

DR FOULIS would like to ask—Does alcohol keep the heart going in those diseases where it has a tendency to fail, and where the disease tends to end in death?

Professor Fraser had made some extremely interesting statements, yet he was staggered by what he had understood him to say, that the effect of alcohol in small doses was to stimulate the heart, and that nutrition really resulted—that force was given as a result of the stimulation. His experience was the opposite of that—that the effect of stimulation was to reduce force. He had seen a man going along the street hilarious and happy, and in a short space of time he had to be carried to bed with his boots on. That was an illustration of what he meant, that stimulation is followed by exhaustion. He held the view that action was always followed by reaction, and had therefore come to the conclusion that alcohol is of very little if any importance in assisting the heart's action in what he might call chronic disease.

DR WELSH thought that Dr Woodhead had already pointed out the chief lines on which pathological changes were met with, but these were almost entirely in cases where large doses and habitual doses of alcohol were taken. The present discussion had gone in what he thought was a more useful direction—on the effects of small or moderate doses. Referring to the effects of alcohol on himself, being very susceptible to its action, he found that a small dose in the middle of the day interfered with the more finely co-ordinated movements. In the early part of the evening also he found that power of mental work was diminished The work did not bear the cold scrutiny of next morning. But there was another point to which he wished to refer specially. He found that a small dose of alcohol had a very beneficial effect in regard to insomnia, from which he suffered occasionally. He was surprised that no reference had been made to this effect of alcohol, as he had known elderly men who have relied upon this as a very important means of getting to sleep. Small doses had been taken beneficially for years by persons that he knew of.

DR CHURCH, in reference to giving alcohol *in extremis*, pointed out that it acts differently in disease to what it does in

health. The only thing to do was to give small doses and watch carefully. If it increased an already accelerated pulse it was not to be given. If it has the effect of lowering temperature, lessening the heart rate, it should be continued.

DR CLAUD KERR was greatly interested in Dr Woodhead's paper, because it had succeeded in shaking one of his fondest beliefs—that if there is any disease in which one depended upon alcohol especially—it was diphtheria. He was certain that the majority present would agree to that. He had, however, now learned that, at all events under certain conditions, not only is the person or animal more prone to take diphtheria, but that actually the action of the toxin is strengthened by the circulation of alcohol in the serum. As regards proneness to infection, he was inclined to believe it; but was bound to say that he would be very sorry to have to treat cases suffering from toxæmia without alcohol. Whenever he attempted to cut down alcohol in his diphtheria wards, he was very often confronted with sudden heart failure. It was about the only disease in which he used alcohol as a routine. In every other disease one judges as Dr Church had said by the condition of the pulse, the age of the patient, and the effect produced by small doses. But in diphtheria he must say that two out of the last three heart failures which occurred had been in cases which were not given alcohol. He had repented in these cases of not giving it. Now he wished to know from Dr Woodhead what he was going to give us in exchange for alcohol. While admitting that it might be toxic, he did not see that, because it was a poison, it might not counteract a poison. He thought that if there was anything against the use of alcohol in diphtheria it was its tendency to lower temperature—that was the weak point. But what were they to substitute for it. They must not give strychnine—the patient would be dead while they were thinking what to do. They had learned a good deal during the discussion, but had not kept altogether to the practical side of the question.

PROFESSOR FRASER in replying thought that most of the objections raised had already been replied to. Dr Kerr had in a very convincing manner pointed out the stimulative action of alcohol in certain emergencies or crises. There were phases not only in infective diseases, but in every acute disease, where the heart tended to fail, and then, as Dr Kerr had said—what is one to do? Alcohol required no previous digestion; it was absorbed with great rapidity into the circulation; its effects were produced almost immediately. Looking at other substances; strychnine could not be sub-

stituted for it as it acts only on the blood-vessels—it does not affect the cardiac contractions. With any other substance, before its influence could be felt, the patient would probably be dead so far as our interference is concerned. He wished if possible to qualify some impression which had been produced by his remarks. He had at the outset confined himself to the effects of small doses. Large doses were certainly extremely harmful. If they looked upon alcohol as a food substance it must be regarded as having only a very temporary food action. Its operation was that of an insufficient food — only supplying certain elements, on which alone nutrition could not be maintained. Further, as a food it would be extremely expensive and wasteful; and its use was unfortunately attended with an enormous amount of moral failure. His position was rather to show that alcohol was a medicinal substance, with well defined medicinal actions—not to put it in the category of the effect of sixty minims of croton oil as contrasted with one minim, or of ten pounds of beefsteak as contrasted with one pound. His friend Dr Affleck also appeared to have misunderstood what he had said. In reference to pneumonia there again was the difference between small and large quantities or the aggregation of moderate amounts. Of course the prognosis of the alcoholic in pneumonia was greatly prejudiced. Although he knew alcohol to be a poison, he did not use it in such a manner as to produce a toxic action, and did not hesitate to employ it in judiciously adequate doses to produce stimulation—it may be to produce force by its combustion, and thus enable dying organs to revive, when the stomach is so disordered as to be incapable of digesting food substances. He believed this was the cumulative experience of a large number of physicians.

Dr Foulis had also, he thought, misunderstood what he had said. The diagrams showed the effect on the pulse of a single dose of alcohol. Frequent tracings were taken, and at first there was shown to be a stimulation both as regards force and frequency; but gradually these effects were departed from until ultimately the pulse was restored absolutely to its initial condition. The observations were continued some time longer and there was no reaction below the normal point. So he therefore contended that alcohol could be used so that the reaction need not be so great as to produce a condition of greater enfeeblement than the original one.

PROFESSOR WOODHEAD in reply would like to say first how exceedingly glad he was that this discussion had taken place. He thought it had brought out a fact concerning which there is a

good deal of doubt, or should he say confusion, in the public mind They had heard very definitely from Professor Fraser that the use of alcohol as a drug refers to small quantities given on single occasions. He thought that was a fact which could not be made known too widely, because there is an idea on the part of many who are advised to take alcohol that it is not to be looked upon as ordinary medicine, and they go on taking it for long periods in the hope that the improvement would be repeated, when it should be confined to very limited occasions only. It was a very important point to bring out—that alcohol is to be used only on occasions of emergency. While on this part of the question he might reply to Dr Kerr that he was not aware of having ever said that alcohol was not to be used as a drug. He believed with Dr Kerr that, given a certain result to be obtained, one must give any drug in the pharmacopeia; and if alcohol is the only suitable drug, then Dr Kerr and those working on these lines must use alcohol as a drug to gain such definite result. He was not against the use of alcohol under any circumstances. If a definite end is to be obtained it was the duty of every medical man to use it; but he maintained that something should be known of the end to be attained, and the dangers attending its use.

In connection with the action of alcohol being stated to produce leucocytosis, the experiments on animals were directly opposed to this—there was a distinct leucopemia. He would mention in connection with these experiments that they were not carried on for long periods only. The same results were obtained when alcohol was only given for a few days. In three or four days the exhibition of these small doses was quite sufficient to increase the susceptibility of the animal to the action of the three poisons mentioned, but of course it was much more marked when the treatment was prolonged.

As regards the increase of metabolism, and the statement that the amount of carbonic acid gas thrown off was always enhanced by the administration of small quantities of alcohol, recent experiments rather go against this. Professor Fraser shakes his head; but he, the speaker, could only refer to results obtained during the last couple of years by those working on absolutely fresh patients—in these it did not always hold good.

As regards the rapid combustion of alcohol always meaning an increase of energy, there was no doubt a rapid increase of energy; but it appears, in certain cases at any rate, to be an explosion of a not very useful character. He was now speaking from an experimental point of view. It would be absurd of him to take up the position that what occurs in animals must also occur in the human subject. He only brought the matter

forward that it might receive some attention from those considering the question.

The antipyretic action of alcohol was no doubt a marked one, but was very frequently neutralised by the cumulative action of the alcohol as a poison. In certain cases it may bring down temperature, but might do so at an inopportune moment, and it certainly exercised some toxic effect on protoplasm which might be deleterious.

Professor Fraser's joke in reference to the plague he would accept as a joke. (Professor Fraser—It was very serious indeed.) He maintained that the conditions under which the Europeans and natives existed in India were very different. The same susceptibility could be induced in animals by starvation, and one was not surprised that the badly fed natives were much more readily affected; and their surroundings were so different from that of the Europeans, that it was entirely ouside the alcohol question.

In connection with Dr Clouston's remarks he would ask if it was worth while to look for pleasure in such epileptic discharges —because they were nothing more than epileptic discharges that took place under the influence of alcohol? Was it worth while running the risks that accompanied the use of alcohol—at any rate for some? As experiments showed, they were no doubt reduced to automata by alcohol—rythmical movements were produced more readily, and individual movements lost. There was, as it were, a throwing of the balance from single thought movements to automatic movements in a very marked degree. Before leaving this point he would like to ask Professor Fraser what was a useful dose of alcohol? He thought it would be interesting to have from such an authority some indication as to what were to be considered minimum and maximum doses.

Regarding what Dr Ritchie had said about gout and rheumatism, he thought there was no doubt that alcohol acted in these diseases as a cumulative poison, as does arsenic, and might determine an acute or sub-acute attack.

In reference to the use of alcohol in diphtheria, there was one very peculiar action, even when given in nothing more than very small quantities. It increased the liability to the antitoxin rash to a remarkable degree. This had been noticed very frequently—it might be part of the beneficial action which it exerts in connection with diphtheria, especially in persons who were otherwise fairly healthy. And in prophylactive cases it was found that rashes occurred in a great number of cases, but if alcohol was not taken at the same time, or for eight or ten days, the rash did not appear in anything like the same proportion.

There were many other points which he could not attempt to enter into. Although he had brought forward for consideration the experiments referred to, he did not say that they answered a great number of the questions which had been raised; but thought they should consider whether the results obtained could be used to throw more light on the subject.

DR J. W. BALLANTYNE (*undelivered remarks*) would refer to three only of the many points which might be raised regarding the effect of alcohol upon the immature organism (fœtus or embryo). In the *first* place, it had been clearly shown by the experiments of Féré and others upon the hen's egg that alcohol introduced into the egg during the early hours of incubation interfered very markedly with embryogenesis, producing malformations, monstrosities, and non-developments. It was very noteworthy that the most toxic alcohols were also the most teratogenic, *i.e.* those which when injected into the egg caused the largest proportion of monstrous and anomalous developments. He had met with some cases of malformation in the human subject which suggested to his mind that in their production also alcohol in excess in the parents had, by acting upon the young embryo, been the cause of their production. In the *second* place, he thought it had now been clearly established by the careful analytic experiments of Maurice Nicloux, made both upon animals and upon the human subject, that alcohol taken by the mother passed through the placenta to the fœtus *in utero*. Apparently the transmission was very rapid, a fact which might perhaps account for the negative results obtained by earlier observers, and the amount of alcohol found in the fœtal blood did not fall far short of that in the maternal. He did not think that alcohol reaching the fœtus in this way could be less than harmful, when it was borne in mind that many of the tissues and organs, and more especially the nervous system, were in an incompletely developed state at this period of life. In the *third* place, it had been shown that the infants born to habitually inebriate women showed a very high degree of mortinatality. In fact it had been proved from prison statistics by Dr W. C. Sullivan that often an alcoholic mother gave birth to her only living and healthy infant after a period of six or seven months' total abstinence within prison walls — a fact which, while it tended to show the evil effects of alcohol upon the unborn infant, also held out a large hope of successful preventive therapeutics.

Special Article

MR CARNEGIE'S GIFT

How may £50,000 a year be best applied to improving Medical Education in Scotland?

SOMEONE more competent will probably deal with the general University question. To most of us the possible effects of the scheme on our own School seem of the greatest importance, and it is more easy to suggest improvements in the School with which one is best acquainted.

Mr Carnegie's gift has made possible the actual accomplishment of what to many of us were merely sanguine dreams. Twenty-five years ago Edinburgh as a medical school was *facile princeps* in Great Britain; now, while no doubt many of us in our inmost hearts still believe it to occupy this position, its place is no longer so unassailable. New schools, young professors, and adequate means for teaching have diverted many students to schools, where their opportunities for learning are as great, and where the amount of attention they receive from their teachers is very much greater.

Conservatism is always associated with a University, and if the full benefit is to be obtained from Mr Carnegie's donation the younger members of the School must put their hands to the plough to see that undue weight is not given to the views of those who think that what they have been used to in the past is necessarily best for the future. In looking around for means for improving our medical faculty one naturally turns to the German Universities, which Scotland has in the past largely imitated with good effect. Of the Continental Universities only three—those of Berlin, Munich and Vienna—approach Edinburgh in the numbers of their medical students. The German Universities' calendar gives the figures respectively of 1312, 1274, and 1188 for the summer session of 1900.

There are in Vienna 32 ordinary professors, 11 extraordinary professors, and no fewer than 90 docents.

In Berlin there are 15 ordinary professors, 34 extraordinary professors, and 93 docents; while in Munich there are 12 ordinary professors, 18 extraordinary professors, and 31 docents.

The position of the extraordinary professor and the docent is not always clearly understood in this country. The docent closely resembles our extra-mural lecturer. He becomes qualified as a docent after examination, and then commences to lecture just as our extra-mural lecturers do, with the dif-

ference that there is in, at all events, the clinical departments, a much freer use made of clinical material. The docent does not require to wait until he has a direct hospital appointment and patients of his own, but may by arrangement obtain the material from the hospital wards. The classes which he gives are usually subsidiary: thus a course of lectures on Pathological Histology, on Bacteriology, on Refraction, Surgical Operations and the like; but these classes are given (this seems not invariably to be understood) entirely independent of the professor. The extraordinary professors are taken from two classes. Some profess subjects which are more or less special, such as Ophthalmology, Insanity, and the like. Indeed that class of professor occupies the position held in the University of Edinburgh by the lecturers of Ophthalmology, Insanity, Diseases of the Ear and Throat, Tropical Diseases, and Diseases of the Skin. After some years of successful work in this capacity they may be promoted to the rank of ordinary professor. There are, however, other extraordinary professors of the more general subjects who in many cases are promoted from the position of docents on account of their professional eminence. In not a few of the Universities there is more than one extraordinary professor of Medicine and Surgery.

In Vienna Medicine is taught by three ordinary professors; while among the extraordinary professors at least six teach branches of medicine, such as Diseases of the Chest, Stomach, etc. Surgery is represented by two ordinary professors and three extraordinary. Midwifery has one ordinary professor and five extraordinary professors.

In Berlin there are three ordinary professors of Medicine and one of Neurology. Among the extraordinary professors two are described as of Medicine, one of Physical Diagnosis, two of Nervous System, one of Brain Diseases, and another of the Diseases of the Stomach. Surgery has three ordinary professors, two extraordinary professors, one extraordinary professor of Fractures, etc., and one of Urethral Diseases. There are two ordinary professors of Midwifery and two extraordinary. There are two ordinary professors of Anatomy and one extraordinary, while there is also a professor of Histology. Physiology has one ordinary professor and two extraordinary.

In Munich the ordinary professorships are very much as in Edinburgh. In none of the Universities are the professors of the scientific subjects, such as Chemistry, Botany, and Zoology reckoned as part of the Medical Faculty, and the Munich numbers are brought up to those of Edinburgh by the inclusion in the professoriate of the teachers of Mental and Eye Diseases. There are two extraordinary professors of Medicine and two

of Surgery—altogether eighteen extraordinary professors and thirty-one docents.

It is quite evident that in comparison with schools of a similar size that the University of Edinburgh is ridiculously under-staffed; and had it not been for the relief given by the Extra-Mural School, it would have been practically impossible for it to have been carried on. The obstacle in the way of extension of the university teaching has always been the financial one; and now that this no longer exists, it is well worthy of consideration whether the School would not be greatly strengthened by being welded into one composite organisation within the walls of the University. The Extra-Mural School has ready the staff of teachers to at once supply the under-staffed University on nearly as liberal a scale as the universities we have described. The argument that competition has been the life of the Edinburgh School in the past would still remain true, for competition would only be changed from extra to intra-mural.

The practical points before us are, however, in what way and how far is such a system applicable to the University of Edinburgh without too greatly upsetting the existing arrangements. There is no doubt that it is to its Extra-Mural School that Edinburgh owes both its past and its present position; more especially as is the case in the Clinical department, where had it not been for the ordinary physicians and surgeons giving clinical instruction qualifying in the University, a great number of the students must have gone untaught. It does not then seem unfair that now this great opportunity has come that the University should lengthen its bonds and strengthen itself by taking in, at all events, the greater part of the Extra-Mural School, and forming one great powerful organisation.

It is quite obvious that there must shortly be several changes in the curriculum. The undue importance given to the preliminary scientific subjects, and to certain subjects in the curriculum is becoming more and more evident, and to all this will give opportunity for modification. At present there are three professors who teach Medicine clinically—the professors of Medicine, Materia Medica, and Pathology. It is, of course, an understood thing that the next professor of Pathology will not be a clinician. The subject of Materia Medica is one which even its professors admit hardly requires a course of one hundred lectures, and most of them at least devote a large portion of their course to therapeutics. It is one of the instances of the conservatism shown in these matters that hours are devoted to the shape of the particular varieties of senna leaves, and the appearance of the different varieties of aloes. In

medicine, then, there is no violent reform required. Let there be three professors of Medicine, one of them specially appointed for therapeutic teaching, and each giving qualifying courses. In Surgery, too, changes are eminently desirable from the present state of matters, to which the professor of Surgery is not recognised as qualified to teach Clinical Surgery. Undoubtedly, the two Surgery Chairs should both be systematic and clinical, and it would be well to take advantage of the present opportunity to create a third Chair of Surgery. In both these great departments there is abundance of room for two extraordinary professors, who might either take up special departments, such as Neurology, or who might prefer to give ordinary qualifying courses. In their case, if they chose the latter alternative, the arranging of accommodation might be left to themselves.

With regard to Midwifery the writer heard the present incumbent of the Chair, so long as nineteen years ago, state in his opening lecture that the separation of the Chair into its two branches was a matter of urgent importance. That importance is no less urgent now, and indeed the present student has made the matter perfectly ridiculous by taking in many instances no fewer than 250 lectures on a subject in which all the systematic instruction necessary ought to be conveyed in a course of 50 lectures. There should be one ordinary professor of Midwifery, one of Gynæcology, and an extraordinary professor of each.

Pathology should probably be left under one head, who should also be the nominal head of the *post-mortem* department, but the facilities for learning should be increased by the appointing of several docents, one of whom might have rank of extraordinary professor. Hardly any subject in the curriculum requires closer personal teaching than does Pathology, and the present practical classes are too large, although nothing to what they were a few years back.

Bacteriology should be elevated to an ordinary professorship; the absurdity of the present system has been shown recently by the fact that the University lecturer on the subject had to resign the position because he was no longer assistant to the professor of Pathology. Probably the selection of professors' assistants as University lecturers is one of the weakest spots in the present system; and as it was avowedly done from motives of economy, we may hope that Mr Carnegie's golden stream will at least see that anomaly removed.

It is quite evident to everyone that the classes of Anatomy and Physiology are too large to be undertaken by any one teacher, and that a division of both those Chairs would be for nothing but good. The laboratory accommodation makes this

a serious question for expense, but fortunately some of the money is to be available for laboratory purposes.

It would surely be well to take advantage of the present opportunity to definitely arrange the vexed question of Histology, and to decide once and for all whether it should be taught by the anatomist or by the physiologist.

The present independent lectureships, such as the Diseases of the Eye, Ear and Throat, etc., should undoubtedly be converted into extraordinary professorships. It is quite ridiculous that one of the eminence of the University lecturer on Mental Diseases should hold the same University rank as the graduate of a few years' standing who has just been appointed assistant to one of the professors.

The new subjects which have recently been added to the curriculum have involved an increased tax upon the student's pocket.[1] We are not among those who attribute over much importance to increased expense as a factor in the decrease of students. Our experience has always been that students showed no reluctance to take out extra classes so long as they were satisfied they were getting the value for their money. But since one of the main objects of Mr Carnegie's benevolence is relief to the student, it would be a very simple matter to allow a small endowment for these subjects, and to diminish the fees demanded from the students. This would especially refer to the subject of Bacteriology, a practical knowledge of which has now become a necessity for every thoroughly trained practitioner. It of all subjects requires close personal teaching and small classes, and it is therefore impossible for such classes to be conducted for small fees. Subsidised lecturers would not feel the same restrictions in the matter of expenditure, and arrangements could easily be made for *each* student to have real practical instruction in this most important department.

This suggested scheme does not end with the professors or extraordinary professors. From our experience in the past we know of what great value to the School it has been for any young man who felt that he had it in him to commence lecturing on any subject. That right should certainly be retained, and it should be as free in the future as it has been in the past, for any graduate to qualify, after a strict and searching examination, as a lecturer in any department of medicine. In the future, however, he would lecture as a member and under the authority of the University, the higher posts in which would always be open

[1] It is interesting to discover that in some of the German universities there are arrangements for paying or remitting the fees of needy students practically identical with those proposed by Mr Carnegie.

to a successful lecturer. The late Mr Duncan's suggestion that every lecturer should be required to give his services gratuitously as an examiner in his subject is an admirable one and would further tend to weld the School into one composite whole.

There are undoubtedly difficulties cropping up here and there, as they do in any scheme of reform. One of these is the great number of lecturers in certain subjects. At present all the assistant surgeons lecture on Systematic Surgery, and all the full surgeons on Clinical. This is brought about by the necessities of University recognition, which do not permit of any one individual lecturing on both these subjects, and one would hope that this will be one of the anomalies which will shortly be things of the past. Would it not be a simple solution that the surgeon and his associated assistant surgeon should give their course jointly, the one taking the main charge of the systematic and the other of the clinical instruction. In Medicine, where the arrangements are different, and where lecturing on both systematic and clinical is allowed to one individual, things would probably work out each very much as they do at present, where the systematic teaching of Medicine is practically remitted to the full physicians while the assistants give courses similar to those frequently given by the docents in the German universities.

It is true that these proposals are apparently complicated by the fact that while the University would elect to some of the appointments others would practically be made by the Infirmary managers. After all, however, this is more and more an apparent than a real complication, for at present appointments to Chairs in the University are made by several different bodies; the Crown, the Curators, Faculty of Advocates, etc.

These are put forward as suggestions which appear to one who has practical experience of both the Edinburgh and the German systems, as likely to strengthen the School. One thing we believe is certain, and that is that no scheme will be satisfactory which does not place the holders of the new appointments which will almost certainly be made on the practical equality with the present holders of the Chair. This custom of appointing assistants directly dependent on the professor to give what are supposed to be independent courses is one which has in it not only the seed but the actual growth of failure.

Healthy competition in the Edinburgh Medical School has done much for it in the past, and healthy competition IN the University would do it for the University in the future.

A. B.

Recent Literature

CRITICAL SUMMARIES AND ABSTRACTS

MEDICINE

GASTRIC ULCER AND ITS SURGICAL TREATMENT

By J. MACKIE WHYTE, M.A., M.D.,
Physician, Dundee Royal Infirmary

THE recent discussion on "Gastric Hæmorrhage and its Surgical Treatment," at the Edinburgh Medico-Chirurgical Society, fully reported in this journal for March 1901, had in it so many matters of the very gravest import that it seems desirable while the subject is still fresh in our minds to try to get at the experience of other men than those who so ably led and joined in the debate. While Mr Mayo Robson was very successful in limiting himself to the subject as defined in the title, it was inevitable that both he and those who followed should touch to some extent on other aspects of gastric ulcer. "The Surgical Treatment of Gastric Ulcer and its Sequelæ," was the subject discussed at the Berlin Verein für innere Medicin on the 17th December and 21st January last (*Deutsche Med. Woch.*, March 21st and 28th, 1901). Professor Körte led off with a paper on the subject from the surgeon's point of view.

Operations on the stomach for cancer are limited by the difficulty of early diagnosis, and the danger of recurrence: in ulcer, on the other hand, the diagnosis is easier, and there is no difficulty about the stage of the disease, for in the great majority of cases, with the exception of very early perforations, no operation is undertaken unless internal medical treatment has done its best and failed, or sequelæ of a mechanical nature have developed, which can be removed only by surgical interference. A strong warning was given against operating in spasm of the pylorus and other neuroses of the stomach. As to the permanence of results, as a rule there is complete restoration of health; the danger of recurrence of the ulcer or formation of new ulcers through persisting hyper-acidity being not great, so far as present experience goes. It is to be remembered that in most operations on the stomach, the ulcer itself is not touched, but is allowed to heal through the better conditions provided by gastro-enterostomy.

The chief indications for operation are (1) stricture of pylorus; (2) ulcers, especially in the neighbourhood of the pylorus, which defy internal treatment, and cause intolerable

suffering; (3) repeated *small* hæmorrhages; (4) severe hæmorrhages threatening life, which may make operation necessary as the only hope; (5) perigastric adhesions after ulcers, when they cause great discomfort; (6) perforations, for which operation is urgently indicated within the first twelve hours.

In the case of cicatricial contraction of the pylorus, a time always comes when the patient's steadily increasing debility forces on the question of operation.

The *danger* of operation must always make one anxious to exhaust other means of treatment in the first place. The degree of danger varies with the strength of the patient, the position and size of the ulcer, the extent of the adhesions, condition of heart, lungs, kidneys, etc. Certain accidents, such as peritoneal infection, giving way of sutures, and so forth, are now very rare. Others, such as pneumonia, embolisms, secondary hæmorrhages, are unavoidable.

Körte then gave an account of his experiences in thirty-eight cases of operation for gastric ulcer or its consequences. All had suffered much in their nutrition—some extremely. Stenosis of the pylorus, with dilatation of the stomach, was present in thirty-two cases. A tumour was often felt, giving rise to suspicion of cancer. Besides stenosis of the pylorus, and dilatation of the stomach, the indication for operation was twice afforded by direct troubles from the ulcer, once by dangerous hæmorrhage, ten times by perforations into the peritoneal cavity, and six times by perforations into the sub-phrenic space. As to the kind of operation, resection should be attempted only in very favourable conditions or where cancer is suspected.

There were four recoveries out of five "circular" resections, and the only case of "segmental" resection recovered. Gastro-enterostomy was done twenty-nine times, with seven deaths; it is the normal method of treatment in stenosis. Murphy's button was not employed, Von Hacker's method being used latterly. In one case a peptic ulcer of the jejunum formed three years after gastro-enterostomy, causing death by perforation.

Subsequent inquiries show that all the cured patients are enormously improved in nutrition, and are fit for work, although some of them have discomfort now and then.

In the only case of operation for hæmorrhage the technique was extremely difficult, the bleeding being stopped by sutures. However, after eight days the patient died, the sutures having cut through the vessel (the splenic artery) and caused a renewal of hæmorrhage. These seem the more important of the details mentioned.

A. Fraenkel said there were three main indications for physicians to call in surgical help: (1) Such a degree of motor

insufficiency as to threaten life through practical starvation. Favourable as were the results of operation for this, we must remember there was a percentage of mortality, and a distinct risk of the formation of ulcers in duodenum or jejunum. Such an unexpected complication should strengthen physicians in the resolve not to call in surgeons straight away in every severe case of pyloric stenosis, in the belief that everything would be right if a new communication were established between stomach and intestine, but to do everything possible by regulating the patient's mode of life to remove the disturbing symptoms.

(2) Hæmorrhages. Operation is to be allowed only after the very gravest consideration. Often it is impossible to stop the bleeding even after the stomach is opened, particularly in cases where an important artery in spleen or pancreas is eroded.

(3) Severe pain. No case of Fraenkel's had been operated on for this alone; usually perigastric adhesions were present; these can at times be removed surgically.

Boas referred to the great disparity as to results of medical treatment revealed by statistics, criticising especially such as those of Debove and Rémond, which showed 50 per cent. of cases not cured, and of these 20 per cent. were said to have died afterwards of tuberculosis.

Uncomplicated gastric ulcer is essentially a curable disease: in certain complications the surgeon may achieve success. Of these he referred chiefly to stenosis of the pylorus, which in pronounced cases could not be cured by internal treatment. Spastic stenosis, on the other hand, he held most decidedly, contrary to certain French and Italian writers, should not be operated on. Although at first sight this often closely resembled the organic form, careful treatment by lavage, diet, etc., usually produced marked improvement in a week or two.

Albu referred to the greater readiness shown by surgeons of other lands, especially France, to operate on the stomach, and urged the Germans rather to persist in their conservative attitude. He himself was influenced by a series of unfortunate experiences. The operation for gastroptosis, stitching the stomach in a higher position, in spite of numerous successes in France, was one which he could not consider necessary or useful. In neurotic conditions it was necessary to put the patient on treatment for weeks or months, a difficult thing of course in the working classes; but we should never let ourselves be induced to recommend a dangerous operation in order simply to shorten the treatment. Gastro-enterostomy he considered quite insufficient to stop such severe bleedings as usually indicated operation. In one case,

immediately after this operation, renewed fatal hæmorrhage occurred.

In certain cases of stenosis of the pylorus, where in spite of dietetic care lasting over years the condition was getting worse, the urine diminishing, and emaciation advancing, operation should be performed. In obstinate cases of simple ulcer he had had the best results from rectal feeding for fourteen days, and, thereafter, most strictly regulated diet for at least three months.

Rosenheim remarked that his experience during the past seven years had made him much less ready than before to submit ulcer of the stomach to surgical treatment. He did not differ much from Körte's position, that surgical interference must be preceded by the exhaustion of all medical means. There was not much difference of opinion as to pyloric stenosis. It was often very difficult to be quite sure of the existence of ulcer. The symptoms were in part of a purely nervous character; in many very chronic cases we might be pretty sure that perigastritis was present, and patients should be warned that in such a case operation might not prove of very great benefit, even if it was immediately successful. No guarantee of cure could be given. Sometimes (and of this he gave two instances) the fistula in gastro-enterostomy was of no use. In cases of diffused perigastritis he had not seen much good in breaking down adhesions, unless, perhaps, where they were in the form of a band or cord.

Litten referred to a class of cases where on account of the age and symptoms there was doubt as to whether carcinoma or simple ulcer was present. Several of these he had seen die without operation, on account of want of agreement on the part of the physicians, and want of decision on the part of the surgeon, although the section showed a simple ulcer for which an operation would probably have been successful. The symptoms in those cases were much alike: almost constant pain, often paroxysmal, at a fairly definite point in the epigastrium, notably increased after food, even by cold liquids; also extraordinary emaciation, the patients being averse to taking anything; no hardness; no enlargement of the left supra-clavicular glands. The duration was generally too long for cancer. In such cases he now thought nothing would be lost by operation.

Heubner's special theme was a pyloric stenosis occurring in the first year of life, described, in fact, as congenital by Thomson of Edinburgh. He had seen at least eleven cases of this sort. The symptoms were unceasing vomiting, very obstinate constipation, and scanty urine. Peristalsis of the somewhat dilated stomach could be seen. *Post-mortem*, nothing could be found

but greatly hypertrophied muscle at the pylorus. He knew such a case had been operated on, but he strongly opposed such a proceeding. These cases would yield to simple treatment in most cases; nourishment at somewhat long intervals, poultices over the stomach, washing out the bowel, and in certain cases minute doses of opium.

Strauss agreed with those who saw little cause for handing over severe cases of hæmorrhage to the surgeon. Four years ago he thought differently, but as most cases that were operated on died, and as on the other hand a certain number recovered with the most careful nursing and absolute rest to stomach and whole body (rectal nourishment, large doses of morphia, etc.), he now adhered to medical methods. He had paid special attention at the autopsy in fatal cases to the question whether a surgeon would likely have succeeded in stopping the bleeding, and in none of the six fatal cases he had seen in the last four years did he think that he could. As regards the cure of ulcers, he did not think this expression could be used with any confidence; no doubt a cure did occur now and then, but generally speaking the ulcer simply passed into a latent stage. The abundant use of milk-fat in the diet helped to overcome the hyper-acidity; in motor insufficiency, too, it should replace the more easily fermenting carbo-hydrates to as great an extent as possible.

Körte in the course of his reply said he did not wish it to appear that he would bring the operation into discredit. He believed that through surgical treatment of the consequences of ulcer, quite remarkable beneficent results had been obtained. One of the speakers said we could not give a guarantee of success. Of course not. But which of them could guarantee a cure of gastric ulcer by medical means? Cases ran a course of twenty or thirty years, and were perhaps several times counted in the list of hospital cures. Surgical methods are no doubt more dangerous than medical, but what was to be done if in spite of medical treatment the patient was steadily going downhill to death by starvation or suffering past endurance? As an alternative he might submit to an operation which, no doubt, had its dangers, but which offered a hope of cure.

The above discussion brings out several points which are common to the now somewhat lengthy list of cases on the borderland between medicine and surgery. Distinguished physicians like Rosenheim admit a change in their practice as a consequence of bad surgical results, and we all know how our minds are influenced one way or another by the last striking case we have had to deal with. The family medical adviser above all, coming intimately into contact with the more purely

human side of the case, and placing himself as he inevitably does as much as possible in the position of the patient or the closest relatives, is prone to hesitate before he calls in a surgeon for doubtful cases, where he sees some hope of tiding the storm. What is "merely a surgical consultation" generally means that the physician has resigned himself to try the luck of operation. There are, on the other hand, cases such as Litten spoke of where in all probability an operation would have been life-saving. A re-perusal of Mr Mayo Robson's address makes one more than ever admire his clearness and accuracy of statement, and his great and increasing skill in dealing with such difficulties as gastric hæmorrhage presents. The "personal equation" of the surgeon, we are thereby reminded, must always be one of the deciding factors in perplexing cases on the borderland of medicine and surgery.

NEUROLOGY

By ASHLEY W. MACKINTOSH, M.D.,
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H. HEAD and A. W. CAMPBELL (*Brain*, 1900, p. 353) have an exceedingly interesting and important paper on the subject of Herpes Zoster. Their work deals with herpes from two aspects: (1) its pathology, and (2) the bearing of the distribution of the eruption on sensory localisation.

They find that, since von Bärensprung (1861) first stated that herpes zoster was definitely of nervous origin, and (1863) published a case with autopsy, showing a lesion of the posterior root ganglion, only two satisfactory reports on zoster ophthalmicus, and five on zoster of the trunk have been recorded. In the work before us full notes are given of twenty-one cases with autopsies occurring at all stages after the appearance of the eruption, while it is stated that drawings or photographs have been collected of 450 cases that have come under personal observation.

Herpes zoster must be considered "an acute specific disease of the nervous system." There is a febrile period of three to five days, with a feeling of illness and more or less pain; the rash may appear a few hours after the onset of the disease or may tarry till the fall of temperature—most commonly it appears on the third or fourth day. As in other acute specific diseases, second attacks are uncommon, and epidemics occur. Herpes zoster is exactly analogous to acute anterior poliomyelitis, and the pathological changes found in the anterior horn in the latter disease are precisely those found in the posterior root

ganglion in zoster; the posterior root ganglion is indeed the exact sensory equivalent of the anterior horn on the motor side, and thus zoster might justly be spoken of as acute posterior poliomyelitis.

In zoster the primary pathological changes occur in the posterior root ganglion, and consist of an acute interstitial *inflammation*, accompanied by necrosis of the ganglion cells; they are not such as are caused by experimental occlusion of vessels of the spinal cord or brain. Nothing is known of the nature of the toxic agent; microscopically, no sign of bacterial infection was found. This unknown agent has a specific attraction for the posterior root ganglion, especially in its dorsal part, and it commonly attacks one ganglion only. Moreover, some ganglia are much more prone to attack than others, the ganglia most commonly affected being those which receive afferent impulses from the viscera through the sympathetic, and which, anatomically, are found to contain a marked preponderance of the smaller type of ganglion cell; these small cells, amongst other functions, probably subserve that of pain, hence the intense pain which accompanies an attack of zoster. As regards the cause of the eruption, the writers do not imagine that it is produced " by disturbance of special trophic nerves, but by intense irritation of cells in the ganglion, which normally subserve the function of pain, and more particularly that form of pain produced by afferent visceral impulses."

The pathological changes found in cases of zoster are described in considerable detail, and there are many excellent plates to illustrate them. *In the ganglion of the posterior root* the acute changes consist of (1) an extremely acute inflammation, with the exudation of small round deeply-staining cells; (2) extravasation of blood; (3) destruction of ganglion cells and fibres; (4) inflammation of the sheath of the ganglion over the inflamed portion, which is mainly in the dorsal aspect of the ganglion. If severe, this condition ultimately leads to a fibrous scar and dense fibrous thickening of the sheath in the affected area; if the eruption has not been severe all traces of the inflammation present in the acute stage may pass away, leaving the ganglion apparently normal. In the *posterior nerve-roots* and *in the peripheral nerves*, the changes found are just those which might have been expected from the lesion of the posterior root ganglion, viz., an acute degeneration, followed by a greater or less amount of secondary sclerosis, according to the severity of the acute destruction; in the nerves the degeneration could be traced to the fine twigs which passed into the skin to supply the area covered by the eruption. The anterior root

was in all cases normal. *In the spinal cord* acute degeneration of the root-fibres is found in the posterior columns, and the course followed by these degenerated fibres corresponds exactly to that seen in experimental division of the posterior roots. Thus, where the area of the eruption extends on to the arm, the degenerated fibres can be followed in the cord first into the root zone, and thence by the postero-external column to the cuneate nucleus; where, on the other hand, the eruption extends on to the leg, the field of degeneration in the cord, as it ascends, passes into the postero-internal column, and can be traced up into the cervical region. Where, however, the eruption lies solely on the trunk—from lesion of a ganglion between the third and eleventh dorsal—the degenerated fibres are found to diminish rapidly in number in their upward course, and disappear only a few segments above the level of lesion. This leads to the important deduction regarding the physiology of the spinal cord, that "the posterior roots in the dorsal region, containing as they do afferent fibres from the trunk, consist mainly of short fibres which do not form a part of either the postero-internal or the postero-external columns in the cervical region of the spinal cord, whilst the long fibres that form these columns come almost exclusively from the leg and the arm respectively." Another interesting point brought out by these cases is that the signs of acute degeneration of fibres in the posterior roots, peripheral nerves and spinal cord become visible about the ninth or tenth day after the appearance of the eruption; further, that the products of acute degeneration are removed much more slowly in the spinal cord than in the roots and peripheral nerves, and no perceptible sclerosis remains behind in the cord, whereas it is quite evident in roots and nerves when the lesion in the ganglion has attained any degree of severity. Two cases of *zoster of the trigeminal* came to autopsy and these showed that "zoster of the branches of the trigeminal is associated with a similar lesion in the Gasserian ganglion to that found in the posterior root ganglia in cases of zoster of the trunk and limbs. This lesion causes secondary degeneration in the sensory root of the Gasserian ganglion both in its extra- and intra-medullary course." With regard to the pathological changes in the *skin* and *glands*, sections through an unruptured vesicle of herpes zoster show a cavity, the floor of which is formed of naked papillæ in a condition of profound inflammation. The cavity of the vesicle is filled with fluid, within which lie small round cells and broken-down epithelial cells. No micro-organisms could be found either in the fluid or in the skin. The lymphatic glands enlarge and frequently become tender very early in the disease. All the areas of the thorax above the seventh dorsal appear to

drain into the axilla, all below this area into the groin. Excised glands were found to be in a profound condition of inflammation, but revealed no micro-organisms.

What has been said refers to spontaneous or primary zoster. Head and Campbell, however, include in their series some cases from which the interesting conclusion is drawn that "zoster in all respects resembling that arising spontaneously may be produced by implication of a posterior root ganglion in inflammatory processes secondary to malignant disease, tubercle or injury." Examples are also given of the occurrence of zoster in the course of disease of the nervous system, notably tabes and general paralysis. The latter disease "undoubtedly disposes to zoster," but "this is probably due, not to any direct implication of the ganglia of the posterior roots in the disease process of general paralysis, but to general susceptibility," such as is shown by the undue frequency of attacks of acute lobar pneumonia and dysentery.

The second part of the paper deals with the bearing of the distribution of the eruption in herpes zoster on sensory localisation. From careful examination of the situation of the eruption in 450 cases, confirmed by autopsy in 21 cases, the authors have constructed a diagram to show the areas of skin occupied by the eruption in affection of the different posterior root ganglia. In this way a series of segments is marked out on the body, differing somewhat in form from Head's original areas, so well known, but agreeing very closely with regard to general position. Thus, the third dorsal area is found to supply part of the inner side of the arm, the umbilicus lies between the ninth and tenth dorsal areas, and the twelfth dorsal supplies the skin below as well as above Poupart's ligament—these were the points most adversely criticised when Head's original diagram appeared. The shape of these areas may vary considerably with individual differences in the shape of the patient's body, apart from variations in the area supplied by the individual posterior root ganglia. There is also actual variation of nerve supply: the eruption due to affection of a particular ganglion may be placed somewhat higher or somewhat lower than what is usually the case, but the displacement is never found to exceed half an area in either direction. Further, the areas overlap one another to a very variable extent, the overlap being most marked on the limbs, especially at their termination. "In no case does the zone of overlap equal in extent more than one-half of the area above and below, whilst in many cases it is considerably less."

Full notes of the histories and of the *post-mortem* examinations in twenty-one cases, with figures to show the distribution of the eruption in each case, and numerous excellent plates to illustrate the pathological changes, are given together with an

extensive bibliography. The work is one which has entailed prolonged and most careful observation of an enormous number of cases of a disease whose interest is not confined to the neurologist, and it deserves the closest study.

In a former number of this Journal (February 1900) a digest was given of literature dealing with the subject of the *Stereognostic Sense* (*i.e.* the faculty of recognising the nature of objects by handling them), and certain conclusions were drawn. More recently, several papers have appeared on this subject, especially by American writers. Burr (*American Journal of the Medical Sciences*, March 1901, p. 304) records examples of the loss of the stereognostic sense (astereognosis or stereoagnosis, as he prefers to call this condition) and states conclusions, of which the chief are the following:—(1) The ability to recognise objects by handling them depends upon the integrity of the afferent nerves, the cortical sensory area and the cortical perceptive area (*vide* below)—disease of any of these will make it impossible for the patient to recognise objects by handling them. (2) Which form of sensation is most necessary for the recognition of any given object depends upon the qualities of the object. Tactile anæsthesia, if sensibility to stronger pressure is preserved, causes little or no difficulty. The space-sense (*i.e.* the faculty of distinguishing simultaneous impressions), the localising sense and the sense of position are probably the most important. (3) There is a distinct area of the cortex in which sensations produced by handling objects are grouped together to form tactile memory images: this, the tactile perceptive area, is in the parietal lobe and it is not the same thing as the sensory area, though it may be located within the boundaries of the latter. (4) Tactile amnesia includes the cases in which, on account of disease in the tactile perceptive area, the tactile memory images are destroyed. It is not unfrequently associated with mind blindness and, indeed, it is probable that always in recognising objects by handling them we recal from memory a more or less faint recollection of the visual appearance of the object. Auditory memories are less frequently recalled, because less frequently needed to make a complete percept, and those of smell and taste quite rarely. Burr emphasises the fact that we must clearly distinguish between the two forms of astereognosis, peripheral and central. The former is due to failure of one or more of the primary sensations (from disease of the sensory nerves, or of the sensory tracts in the central nervous system); the latter is caused by disease of the cerebral cortex, which interferes either with the proper correlation of the various sensations received from handling an object, or with what Burr calls the "tactile mental images," stored up in a

particular part of the cerebral cortex (*vide* above). More stress ought, we think, to be laid on the tracts which connect the sensory cortical area related to handling objects with other sensory centres, especially the visual, whose associated activity seems necessary for the recognition of objects by handling.

Another paper by Walton and Paul (*The Journal of Nervous and Mental Disease*, April 1901, p. 191) deals with "The clinical value of astereognosis and its bearing upon cerebral localisation." With regard to the localisation of the cortical areas concerned in astereognosis, they incline to the view that the stereognostic sense has its principle seat in the central convolutions, *i.e.* in the motor areas of the cortex. In cases with anæsthesia resulting from lesion of the Rolandic region, they find that the one *constant* sensory disorder whenever tested has been that of the stereognostic sense. Astereognosis has been present in every case of Rolandic disease coming under their observation since commencing this study. It is true that many cases of lesion of the motor cortex have been reported without any sensory impairment, but the condition of the stereognostic sense has been noted in comparatively few; and, granted that a certain number of cases of purely motor paralysis do occur from Rolandic lesion, this is not incompatible with the above-mentioned view, if the motor and stereognostic centres are distinct. Purely motor hemiplegia, however, is not so common as was formerly thought. Their observations show that "a large percentage, perhaps a third or more, of hemiplegics show lasting astereognosis," irrespective of the site of the lesion.

Their remarks on the bearing of their observations on the seat of the lesion in a given case of hemiplegia are interesting, although, as they state, no final rules can as yet be laid down. Even as the initial symptom of a case, astereognosis may occur in disease of the internal capsule as well as in cortical and subcortical disease. It is therefore not a factor of diagnostic value as regards the site of the lesion, but is generally merely a corroborative focal symptom. The writers think, however, that "given a case of hemiplegia without astereognosis or other sensory disorder, the chances are perhaps in favour of capsular disease." Again, "it seems a safe working plan in operable cases with no other localising symptom than astereognosis, to select for the centre of the area to be exposed a point in the ascending convolution at a height corresponding to the motor representation of the extremity involved."

The subject with which these papers deal, is one not merely of theoretical interest but also of great practical importance, as it has, we think, intimate bearings on wider questions connected with the sensory functions, general and special, of the cerebrum.

It would be well that the condition of the stereognostic sense should be noted in the routine examination of the sensory condition in cases of nervous disease.

SURGERY

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Cancer Distribution, with Special Reference to the Parasitic Theory.—Dr Lyon of Buffalo has published a most important and most interesting paper on this subject in the *American Journal of the Medical Sciences*, June 1901. Behla's startling paper seems to contain a more plausible and striking array of facts, which, on a wider basis, would almost amount to a demonstration; but though Lyon's paper does not bear out some of Behla's contentions, it certainly adds strength to others, and all tending to push us nearer and nearer to the parasitic origin of cancer. The following paragraphs are mainly an abstract of Dr Lyon's paper.

Next to direct scientific study with a view to demonstrating a specific organism, the most promising field of research probably lies in the statistical study of the disease, in observations on its distribution, and an analysis of its relation to race and natural environment. Of the various previous investigations the most striking is that made by Behla, at Luckau, in Germany, an investigation which deservedly attracted widespread interest, and the results of which certainly supported the parasitic theory.

Luckau consists of a central portion with 3000 inhabitants, and two suburbs with 1000 inhabitants each. During twenty-two years cases of cancer were distributed in the following remarkable way: in one suburb, the Sando suburb, no cases whatever occurred; in the central town cases occurred not infrequently; while in the other suburb, called the Kalau suburb, *one out of every nine deaths in that suburb was due to cancer.* During the last fifteen months one out of every hundred inhabitants of this suburb died of cancer. The mortality was divided thus:—

Sando district—No deaths from cancer.

Whole town—One out of every twenty-five to thirty deaths due to cancer.

Kalau district—One out of every nine deaths due to cancer.

The population was agricultural and lived on the products of its own gardens and fields. Most of the dwellings were damp. The soil of the central town and of the suburb Kalau was low and moist; that of the Sando suburb was elevated,

sandy and dry. But the chief distinction of the three divisions lay in the position of a ditch which encircled the central town and Kalau, and on the other hand did not come near Sando. *Cancer followed the course of this ditch*, occurring in the central district chiefly among those whose gardens bordered on the ditch, and far most frequently in Kalau where most of the gardens were bounded by the ditch. Of the 127 houses in this district, 56 were cancer houses. After discriminating consideration of the various conditions of life and habits among the people, Behla came to the conclusion that the remarkable distribution of the cancer in the town could be explained only by reference to the position of the ditch. The people were in the habit of rinsing the vegetables grown in their gardens in water taken from this stagnant ditch, and large quantities of such vegetables were eaten raw. (*Centralblatt. f. Bak. Parasit. und Infekt.*, 1898, Band xxiv., and *Zeitschrift f. Hygiene und Infektions Krankheiten*, 1899, Band xxxii.)

Lyon investigated the statistics of a twenty-year period, 1880-1899, examining the official death certificates, and including all cases of death from "malignant tumour" (apparently sarcoma was included). As regards residence, the cases included those who died at home or in hospitals, and whose residence in the city was given in the certificates; those who died in hospitals and whose residence was in other ways found to be in the city; and those who died in hospitals without ascertainable city address, and buried in Buffalo. Those who died in Buffalo, but whose residence could not be proved to be in the town, were excluded. There were 2005 resident cases, and each was marked down in a city map.

House Distribution.—The result showed a scarcity in certain parts, and a marked concentration in other parts of the city. This concentration was a real one, and not due to a greater density of population, and the most marked example of it was furnished by the German quarter, where the cancer cases were actually two and a half times as many as were found in one quarter filled by Americans (native born), the populations being about equal.

Apart from the relation to race, no relation between cancer distribution and local conditions was found. The position of the water-courses was not associated with cancer cases, and in fact the rates were low in the wards bordering on the water front. This did not coincide with Behla's finding at Luckau. Mention should be made, however, of the fact that the Germans quite commonly raise a few garden vegetables, and are in the habit of eating many of them uncooked. The German quarter did not seem to have any peculiarity of soil.

"*Cancer Houses.*"—On the map there were marked 44 houses in which more than one case of death from cancer had occurred, 41 houses having had two cases, and 3 houses three cases each. The cancer houses tended to concentrate in the German district. In many of the houses the interval between the deaths was less than five years, and in most it was less than ten years.

Increased Cancer Rate.—During the twenty-year period the rate increased from 32 to 53 per 100,000 of population. This progressive increase agrees with a similar marked increase for all countries in the civilised world, and is the chief cause for alarm in the cancer problem. While tuberculosis and most other infectious diseases show a steadily decreasing mortality in different countries, everywhere cancer continues to increase year by year in the rate at which it claims its victims. This apparently is a much greater increase than can be accounted for by increased longevity, improved certification, etc.

Race Distribution.—Individually and collectively, all foreign nationalities show a higher rate than the native born (United States) in proportion to representation in population, the death-rate from cancer in Buffalo being more than four and a half times greater for those of foreign births than for those born in the United States. The Irish seem to have the highest, the German and Poles next, and the Italians the lowest.

Sex Distribution and Anatomical Distribution.—The Buffalo statistics confirm one peculiarity which has been elsewhere observed. The cancer rate is, of course, much higher for females than for males (about twice as high in most countries), but the Germans and Poles (in Buffalo and elsewhere) are peculiar in this, that their male rate very closely approximates the female rate. The explanation seems to lie in the fact that cancer of the stomach, which is commoner in males than in females, is particularly frequent in Germans and Poles, whereas cancer of the uterus and breast in females is much less frequent among Germans and Poles than among the native-born Americans. Is the peculiar diet of the Germans more subject to contamination than the food of Americans or other peoples? Compare Behla's charges against the uncooked vegetables at Luckau. Lyon suggests that the infrequency of uterus and breast cancer among the Germans is a weighty argument against the embryonic theory, since the high birth-rate and habit of nursing at the breast amongst the Germans should tend to exhaust and degenerate the uterus and breast; but it seems to me that possibly the artificial avoidance of children and repression of breast milk may tend in the married more towards degeneration than full use of the organs would.

By the time such investigations have multiplied, it is possible that the microscopists may have demonstrated the parasite they are in search of; but in any case their value cannot fail to be very great.

The Sterilization of "Silk" or "Gum-Elastic" Catheters. —On this subject Dr Herman has a note which deserves attention in the *Centralblatt f. Chirurgie*, No. 3, 1901. A method of sterilization which is first of all efficient, and then one which can be conveniently carried out in ordinary circumstances and with any kind of catheter, is, he thinks, still to seek. The subject is one of great practical importance. Metal and rubber catheters can of course be boiled, a method both certain and convenient, but boiling destroys gum-elastic catheters; and yet in many cases these are the only ones that are suitable. Guided by Elsberg's suggestion as to the boiling of catgut in sulphate of ammonia (*Centralblatt f. Chirurgie*, No. 21, 1900), he conducted some experiments which, in his view, warrant the following statements.

Gum-elastic catheters can stand boiling for hours in a saturated solution of sulphate of ammonia (ammonium sulphuricum). After five hours boiling the inner and outer surfaces were still smooth and glistening, and the catheters had not stiffened, but rather become more elastic.

After frequent boiling following repeated use by different patients they were still quite unaltered and useful.

Badly infected catheters were, after three to five minutes immersion in a boiling solution of sulphate of ammonia, completely sterilized.

They can be taken straight from the solution, and, without any washing, after smearing with vaseline, can be used by the patient. No irritation of the urethra has ever been traced to the presence of the solution, though Herman has long used it.

In practice the method is very simple. A catheter vessel of enamelled tin can be used for the solution which is boiled by a suitable spirit lamp. The same vessel can be used for carrying about the catheters in practice.

Herman has made an ingenious suggestion to the manufacturers to see if the sulphate of ammonia can be incorporated in the material of which the instruments are made; this would allow them probably to withstand boiling in ordinary water.

GYNECOLOGY AND OBSTETRICS

THE SURGICAL TREATMENT OF CANCER OF THE UTERUS

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THE surgical treatment of cancer of the uterus being recently discussed at the Congress in Berlin and in Giessen, it is of interest to note the conclusions arrived at, as they focus present opinion in Germany on this important subject. Jordan (*Zeitschrift. f. Geburtsh.* XLV. Band, 2 Heft) refers to the unreliable results of inoculation experiments in studying the ætiology of carcinoma, and the failure of Waelff's serum in its treatment. Jordan, assuming that carcinoma is primarily a local disorder, proceeds to discuss the various methods of treatment. Referring to the treatment of cancer by caustic applications, such as chloride of zinc in 20 to 50 per cent. solution, he quotes a case which appears to prove that even in advanced cases excision without recurrence may thereby be obtained. With regard to supra-vaginal amputation, he gives the statistics of Hofmeier, Winter, and Kruckenberg. Between 1878 and 1891, 155 partial operations were performed, 132 being of value in estimating the question of final cure. 27·6 per cent. of the cases had no recurrence after five years, whereas during the same period total extirpation was followed by only 17·6 per cent. cures. Winter's recent statistics, however, give the more favourable results of 33 per cent. cures after total extirpation. Jordan, although favouring total extirpation, would not discard the partial operation entirely, and advocates it in early cases, complicated for example with (1) renal or heart disease; (2) pelvic adhesions, the result of a previous peritonitis; and (3) in cases where the retention of part of the uterus is desirable. Breisky and Winter have both shown that after the partial operation normal labour is possible. As pregnancy accelerates the cancer growth, the latter possibility is better prevented. The sacral and perineal operations offer no advantages over the vaginal or abdominal route, and they have, therefore, been practically abandoned. As a consequence of Freund's high rate of mortality after the abdominal operation the vaginal route was almost universally adopted, until the abdominal method was advocated anew by Veit and Küstner in Germany, and in 1890 by almost all French authorities. The reason of the revival of the abdominal operation lay in the possibility of removing the affected glands and parametric tissue.

Freund writing in 1898 says: (1) Vaginal extirpation may

be undertaken in cancer limited to the vaginal aspect of the cervix. (2) Carcinoma of the body of the uterus should be treated by the abdominal route. (3) In advanced cases the vaginal method may be employed merely as a palliative measure.

The improved technique and the introduction of antiseptics have so greatly diminished the mortality after vaginal extirpation that Winter is able to show a mortality of only 5 per cent. The average mortality of large collections may be put down as 8 per cent., although individual operators have had even better results. Winter, regarding freedom of recurrence for five years as a permanent cure, gives the following statistics from the Berlin Klinik:—

Of 230 cases of cancer of the cervix, 161 or 70 per cent. had recurrence; 69 or 30 per cent. were cured.

Of 30 cases of carcinoma of the body of the uterus, 14 or 64·6 had recurrence, and 16 or 53·3 remained well; so that out of a total of 260 cases of cancer of the uterus 85 or 33 per cent. were free of recurrence after five years. Of 69 cases observed for a longer period, 16 remained quite well after ten years; and of 16 cases of cancer of the body of the uterus, 5 remained for over ten years without recurrence.

The most recent statistics of the Berlin Kliniks show that one-third of the cases operated on give satisfactory results. Leopold's results are even more favourable. Forty-two cases of cancer of the cervix were under observation for over five years, and 21 or 50 per cent. showed no recurrence. Of three cases of cancer of the body all were cured, or 100 per cent. Landau reports 48 cases under observation over five years; of 45 cervical carcinoma, 10 were cured; and of 3 fundal carcinoma, all were without recurrence.

From these statistics we learn that in those Kliniks the permanent cure is from 22 to 50 per cent. in cancer of the cervix, and from 80 to 100 in cancer of the body of the uterus. It is interesting to note how these excellent results compare with the recent results from operations for cancer in other organs, *e.g.* breast and rectum.

Angerer operated on 189 cases of cancer of the breast, and of these only 32 or 16 per cent. remained well after two years. Czerny, operating by Haidenhain's method, had 28 cures, or 21 per cent., and of 120 cases only 17 were free of recurrence five years after the operation. The best results are quoted by Halsted and Cheyne, who report 40 per cent. free of recurrence after three years. In cancer of the rectum, Kronlein out of 640 cases had 14·8 per cent. well three years after operation; that is, only one-seventh of the cases showed a satisfactory result. These figures prove that the results attained by vaginal hysterectomy

are better than those gained by operation for cancer of the breast or rectum.

In discussing the abdominal route, Jordan points out that the pelvic glands are comparatively late in being affected, as compared with the paravaginal and parametric tissue. Relapses are generally local. In the hope of avoiding this, Mackinrodt has introduced extirpation by means of the thermo-cautery; but on account of greater danger of injuring the bladder, ureter, or intestines, this method has not received much favour.

Jordan discusses in detail the advantage claimed by advocates of the abdominal route, namely, the possibility of removing affected pelvic glands. Two questions arise at this point: (1) the frequency of glandular infection, and (2) the stage of the disease at which the glands become affected. The following figures show the conclusions to be drawn from *post-mortem* examinations. Dietrich found glands affected in 40 per cent. of cases of cancer of the uterus; Wagner in half of the cases. Blau in 93 *post-mortems* found pelvic glands affected in 32·3 per cent. Winter, in 44 *post-mortems* on cases where the uterus had been removed, but where the patient died, found distinct evidence of glandular infection in only two cases. Williams, in 78 examinations found the glands affected 56 times.

These results being so conflicting, we must turn to the results of clinical observation during the operation. Funke examined the glands carefully in 16 cases, but cancer could be proved in two cases only. By far the most valuable observations are those made by Wertheim. In 29 cases of abdominal operation the glands were removed and examined. In 27 cases of cancer of the cervix, the glands were found affected in 10 or 37 per cent., and he concludes that the glands may be affected in early stages of cancer of the uterus. Jordan, however, regards Wertheim's cases as advanced, and holds that there is sufficient proof that glandular infection occurs only in very advanced cases, and is even then comparatively rare. Two facts are gathered from these investigations—

1. That unlike cancer affecting other organs, that of the uterus has less tendency to spread to the lymphatic glands.

2. It is quite the exception to find glandular infection in early stages of cancer of the uterus.

Jordan does not favour extirpating the pelvic glands because:—

1. The uncertainty as to which glandular group is affected renders the complete bilateral removal of all lymphatic glands the only thorough method.

2. Such a method is almost impossible to carry out.

3. Partial extirpation of the glands is useless, as we cannot see which are affected.

4. The proximity of the glands to important structures increases the risks of this lengthy operation.

5. The permanent results are no better.

Jordan emphasises the greater immediate risk of the abdominal operation in comparison with the vaginal operation. Winter had an operative mortality of 45 per cent., Wissebuk 47 per cent., and Picque 35·3 per cent. Individual operators may claim better results, but the average mortality is four times greater than by the vaginal route. Final results cannot yet be definitely ascertained, because five years must elapse before we can speak of a permanent cure. Funke reports 11 cases from Freund's Klinik; 2 died during operation; of the remaining 9, 5 were well five years after operation (3 carcinoma of fundus, 2 sarcoma). Of 18 cases operated on by Wertheim, 8 were well five to nineteen months after operation, 1 was alive with recurrence ten and a half months afterwards, 2 died within eight months, the remaining 7 results were unknown. Leguen operated on 5 cases; of these only 1 was free from recurrence within a year.

The conclusions Jordan comes to are—

1. Vaginal hysterectomy gives with comparatively little risk all the advantages we can, with our present knowledge, expect as a cure for carcinoma of the uterus.

2. The abdominal method has a higher immediate mortality, and so far the permanent results are no better.

These statements lead to the indications for the operation, which are—

1. In all cases where carcinoma is limited to the uterus the vaginal route is to be preferred.

2. Considering the advantages of the vaginal and dangers of the abdominal operation, the indications for the vaginal operation should be extended.

3. The abdominal operation is only to be undertaken by absolute indications, *e.g.* cancer complicated with myoma or ovarian cysts.

Jordan urges the extension of the vaginal route in order to make the operation more radical, and thinks this may be attained by the introduction of Schuchardt's para-vaginal incision. He describes ten cases in detail where areas of cancerous parametric tissue had been removed with the uterus, which otherwise would have required the abdominal operation.

At Giessen, Freund (the originator of the abdominal operation) still regards this as the best method in order that the pelvic glands, which he believes are so frequently affected, should also be removed. Küstner, Wertheim, and Rostock support this route. Schuchardt after describing in detail the technique of

vaginal hysterectomy by a para-vaginal incision, gives the following figures showing the better results which are obtained by his method in contrast to vaginal hysterectomy as generally performed:

	Permanent Cures.
Leopold	10·2 per cent.
Kaltenbach . . .	8 „
Schuchardt, 1894-1901 .	20·6 „
Schuchardt, 1894-1896 .	24·5 „

The general opinion was rather in favour of vaginal hysterectomy, with a more extended technique.

As Winter points out, more extended operations, either abdominal or vaginal, are of much less value as compared with the importance of early diagnosis in obtaining permanent results. A writer, deploring the results obtained from operations for uterine cancer in this country in comparison with the results emanating from German Kliniks, suggested that carcinoma as met with in Germany must surely be a different disease! The better results are, however, in some measure due to the fact that patients abroad seek hospital relief sooner, and the teaching of gynæcology in Germany being mainly clinical, facilities for frequent examination of pelvic cases are more general.

Editorial Notes and News

Opening of the Hughes-Bennett Physiological Laboratory in the Edinburgh University

THE Hughes-Bennett Physiological Laboratory, presented to Edinburgh University by Mrs Robert Cox to perpetuate the memory of her father, Professor Hughes-Bennett, was formally opened and handed over by the donor on Saturday, July 20th. The ceremony was attended by many eminent members of the profession from London, Cambridge, Glasgow, Aberdeen and elsewhere, and by prominent citizens of Edinburgh.

In the afternoon an address was delivered in the M'Ewan Hall by Sir John Burdon Sanderson, Bart., Regius Professor of Medicine in the University of Oxford, and one of the most distinguished pupils of Hughes-Bennett.

The Hughes-Bennett Laboratory, which is built on the south side of, and in direct connection with, the physiological

department, consists of a laboratory proper and a demonstration theatre. The former is fitted with the various appliances and apparatus necessary for the practical teaching of experimental physiology, while a small part at the east end has been partitioned off as a room for microscopic demonstrations. On the south wall of the laboratory has been fixed a bronze bas-relief of Hughes-Bennett, with an inscription commemorating the fact that he was the first teacher in Britain to apply the microscope to the clinical investigation of disease. The theatre, which can accommodate about one hundred students, is constructed so that all will be able easily to see the details of experiments. It is intended for the demonstration of those experiments which the students will not perform individually. Being lit entirely from the roof, the daylight can be easily cut off by a horizontal blind when the electric lantern is to be used.

In his address Sir J. Burdon Sanderson spoke of the great advances made in the science and art of medicine towards the middle of last century, and particularly of the part Hughes-Bennett played in those advances. His guiding principles in teaching were, first, not to advance any pathological doctrine not founded on physiological data, and in the second place to keep constantly in mind that the students were to be turned out as doctors, not merely physiologists. Bennett's most important contribution to the advancement of medical education was the introduction into the Edinburgh School of an exact method of studying the characteristic phenomena of disease, of observing so as to be able to describe in clear language whatever could be seen, heard, or felt in the examination of a patient, whether by the unaided senses, or by the aid of instruments, and especially of the microscope. Other teachers had exhibited microscopic specimens in illustration of their lectures, but Bennett was the first to place the microscope in the students' hands and teach him how to use it.

Bennett's greatest service to the science of medicine was his conviction that the practice of employing bleeding and anti-phlogistics in the treatment of acute disease was not founded on observation and experience, but on dogma and tradition. For twenty years he combated the prevailing notion that every inflammation must be treated by anti-inflammatory remedies with a courage and determination worthy of the highest admiration. Sir John also mentioned a point of special interest at the present moment. In 1845 Bennett published a paper "on the frequent spontaneous cure of pulmonary consumption and the indications furnished by pathology for its rational treatment." At that time phthisis was regarded as an inflammatory disease, and sufferers were

subjected to the so-called anti-phlogistic regimen and to external applications much more distressing than the disease itself. Bennett expressed the belief that, if what was now called sanatorium treatment could be made accessible, patients in the initial stage of the disease could in a large percentage of cases be restored to health, and advocated for this purpose the building erected for the Exhibition of 1851—the Crystal Palace. In conclusion Sir John said Hughes-Bennett would have regarded this new laboratory as an important step towards the completion of the work he initiated in Edinburgh University.

Professor M'Kendrick of Glasgow, who was assistant to Hughes-Bennett thirty years ago, moved a cordial vote of thanks to Sir John Burdon Sanderson, which was seconded by Sir John Batty Tuke, M.P.

The proceedings then terminated, the chairman, Sir William Muir, again expressing the indebtedness of the University to Mrs Cox for her munificent gift.

Royal Colleges of Physicians and Surgeons of Edinburgh, and Faculty of Physicians and Surgeons of Glasgow.

A SPECIAL examination for the Diploma in Public Health was held in Edinburgh in June, and the following candidates having passed the First and Second Examinations received the Diploma in Public Health:—Mrs Euphemia Stoker, L.R.C.P. & S.Ed., Sheffield; Major Robert Caldwell, F.R.C.S. Eng., Major, R.A.M.C.; George Melville, M.B., C.M., Penicuik; and James Sinclair Tait, F.R.C.S.Ed., St Johns, Newfoundland.

New Books and New Editions

Manual of Diseases of the Ear, including those of the Nose and Throat in relation to the Ear, for the use of Students and Practitioners of Medicine. By THOMAS BARR, M.D., Lecturer on Diseases of the Ear, Glasgow University; Senior Surgeon to Glasgow Hospital for Diseases of the Ear, etc. Third edition, revised and partially rewritten. Glasgow: James Maclehose & Sons. 1901. Price 12s. 6d. net.

IT is hardly necessary for us to give a detailed notice of this book, for it is but a comparatively short while since we had the pleasure of noticing the second edition in our pages. Dr Barr

is so well and widely known as an aurist and as a successful teacher that it is no surprise to us that this book has achieved a considerable success, as we formerly predicted it would do.

While the general plan and arrangement of the book is the same as in the earlier editions, it is not merely a reprint, but has been carefully revised and brought up to date, and where necessary parts have been rewritten. Chapters xiv. and xv. are quite new, the former dealing with the very important subject of treatment of intracranial and vascular complications of purulent disease of the middle ear, while the latter is on malignant disease of the middle ear.

On a former occasion we pointed out that it seemed a mistake to describe the opening of the mastoid and other operative procedures in an early chapter before the consideration of the conditions for which such operations may be necessary. We still think this not an ideal arrangement.

We have always thought Dr Barr's book a useful and excellent text-book, and a perusal of the third edition makes us feel that we can recommend it to our readers with even greater confidence than before.

Uterine Tumours: their Pathology and Treatment. By W. ROGER WILLIAMS, F.R.C.S. Demy 8vo, pp. xvi., 359, with 58 illustrations. London: Baillière, Tindall and Cox. 1901. Price 10s. 6d. net.

APART from the intrinsic importance of its subject, this volume has many claims to more than passing notice. It is based on much hard work and careful research, and its author is well aware of many of the fallacies to which medical writers are prone when they have to deal with statistics, while the fact that he holds his personal convictions strongly and defends them keenly only adds to the interest. He is not, of course, exempt from the temptation to draw conclusions from too scanty data, but he is on the whole watchful, and his strenuous defence of his own position seldom leads him to read too much into any of his facts, though the statement that "since not more than 1 in 2000 myoma cases ends fatally, the average duration of life is hardly appreciably affected by the disease," is an instance of his failure. In the matter of tumour origins he is a disciple of Cohnheim, and he develops fully the influence of high vitality and abundant nutrition. In the surgical treatment of myoma he is notoriously but judiciously conservative in the sense of restricting operation, while in cancer he advocates the full abdominal removal. In his discussions of technic a serious blemish is the omission of all mention of angiotripsy. At several points faults of diction

make the real intent of his phrases differ from their face value; but in spite of this and an occasional erratic use of the semi-colon, the volume is a valuable and readable summary of the subject. "G. P."

Arsenical Poisoning in Beer Drinkers. By T. N. KELYNACK, M.D., and WILLIAM KIRKBY, F.L.S. London: Baillière, Tindall & Cox. 1901.

IN this work the authors give within a moderate compass a contribution of considerable moment towards the solution of some of the many questions raised by the recent occurrence of chronic arsenical poisoning in epidemic form amongst beer drinkers.

The first part, which is entirely clinical, offers a graphic account of the physiognomy of the disease thus induced, and by well-conceived illustrations is successful in bringing into view the outstanding features of the affections of the cutaneous and nervous systems. Amongst the more interesting phenomena have been the peculiar and characteristic pigmentation and the erythromelalgia. As regards the purely nervous symptoms, arsenic has apparently led to a neuritis, which at least in the earlier stages has produced mainly sensory derangements with only later the addition of motor symptoms.

There is a long clinical classification of the many varieties presented by this disease, but at the present time all such sub-divisions are tentative and hampered by the difficulty most investigators have felt as to the exact share to be allotted to arsenic and to alcohol in the production of these varying lesions.

The chemical portion deals succinctly with the best method for the detection of arsenic in beer, and traces the manner in which arsenic passed into the beer, as well as demonstrates its occurrence in the secretions and in the tissues of the body. In conclusion, the measures necessary to prevent the repetition of any such poisoning are indicated. A good bibliography is appended. "S."

Lectures on Nasal Obstruction. By A. MARMADUKE SHEILD, M.B.Camb., F.R.C.S.Eng., Surgeon to St George's Hospital, London, and Surgeon in charge of the Throat department; late Assistant Surgeon, Lecturer on Operative Surgery and Aural Surgeon, Charing Cross Hospital. London: Rebman, Limited. 1900. Price 5s. net.

THIS small book contains three lectures, delivered by the author in the Throat department of St George's Hospital, on the causes

and diagnosis of the principal varieties of nasal obstruction, the treatment of nasal obstruction, and the treatment of nasal polypi. The necessity for the publication of these lectures in book form is not evident to us, for the greater part of their contents will be found in most text-books on nasal diseases. Although the subject is one of considerable importance, we do not think the book is likely to prove of any great value to the specialist, while the requirements of the general practitioner would surely have been better served had it contained a separate chapter dealing with the symptoms and effects produced by nasal obstruction. There are omissions, too, which mar the value of the work. For instance, we find no reference to such things as the relation which sometimes exists between attacks of asthma and polypi or adenoids, nor to bleeding polypi of the septum as a cause of obstruction.

The author gives some sound advice against over-zeal in nasal operations, and the book will be found a safe guide as to the treatment of various conditions which produce nasal obstructions.

Sexual Debility in Man. By F. R. STURGIS, M.D., of New York City. Pp. 381. London: Rebman, Limited. 1901. Price 12s. 6d. net.

"TO the sexual cripples of the United States, whose infirmities have in part contributed to his support, this book is gratefully dedicated by their obliged friend, the Author." We are told in the second sentence of the preface that, "The principal reason for writing it is to introduce to the reading medical public sundry opinions the writer holds upon sexual weaknesses in men." The "reading medical public" must be cripples indeed if a production of this kind can be successfully foisted upon them. Persons suffering from sexual perversion will find more of interest in certain books on Medical Jurisprudence; persons suffering from venereal diseases will find better descriptions of their troubles in most of the text-books on such diseases.

"MUNSHI."

Tuberculosis, its Nature, Prevention and Treatment, with special reference to the Open-air Treatment of Phthisis. By ALFRED HILLIER, B.A., M.D., C.M. Small 8vo, pp. 243, 31 illustrations and 3 coloured plates. London: Cassell & Co., Ltd. 1900. Price 7s. 6d.

THIS is a thoroughly satisfactory manual on its subject, and contains full but concise information about the nature of tuberculosis, its different clinical forms, the question of its trans-

mission from man to man, and from animals to man, its prevention in everyday life, and by legislation and public action and its treatment. The whole of these questions are discussed thoroughly, with knowledge and common sense, and the book may be heartily recommended to everyone, layman or professional, who cares to read a thoroughly up-to-date account of the subject.

Notes on Drugs, etc.

Mercurol, Nargol, Cuprol, etc. — Under these names **Messrs Parke, Davis & Co.** have introduced combinations of the metals, part of whose names form the first syllable of the word, with Nucleinic Acid. The method of their preparation was devised by Dr Schwickerath, who has kindly given us details as to the method of their preparation.

The Nucleinic Acid is obtained from Yeast; the impure product is dissolved in Alkaline solutions and precipitated by dilute Inorganic Acid. The product is filtered, and from the filtrate the crude Nucleinic Acid is precipitated. It is then purified by careful oxidation. These compounds are made by the addition to it of freshly-precipitated Oxides of the metals.

Mercurol as a remedy in specific diseases and as a general antiseptic has already made a name for itself, and our experience with **Nargol** and **Cuprol** leads us to hope that they will prove most helpful. The former as an astringent has very few equals. It is unirritating, and yet its effects are thorough and prolonged. Its effects when small quantities are added to Lassar's Paste in certain œdematous forms of Eczema are truly remarkable. It is important that it should not be used concentrated.

Cuprol promises to be useful in the Fungus diseases of the skin, and **Ferrinol**, the combination of Nucleinic Acid and Iron, which is one of their most recent products, has a composition which almost guarantees its usefulness.

Hommel's Hæmatogen.—A large sample of this preparation was kindly placed at our disposal by the manufacturers (**Messrs Nicolay & Co.**), and we have tried it in hospital and in private practice. It is hæmoglobin from the blood, which is sterilized and purified from extractives and other possibly noxious ingredients, and is exhibited in a pleasant and palatable form. We have given it to a number of patients who were suffering from various forms of anæmia, and have found it useful in most cases of simple anæmia, chlorosis, and in secondary anæmias of the chlorotic type. It does not cause digestive disturbance, and the condition of the blood improves rapidly with its use. We have found it specially valuable in infants and young children, to whom it can be given mixed with milk. In cases of anæmia from dyspepsia, and in convalescence from acute febrile diseases, the little patients rapidly improved when Hæmatogen was given. It cannot of course totally displace inorganic preparations, but may with advantage be tried in cases where these are badly borne, and specially in children and persons with weak digestions.

NOTICE.

All communications to the Editorial Department, including Exchanges and Books for Review, should be addressed to THE EDITOR, Dr W. RUSSELL, 3 *Walker Street, Edinburgh, and all business communications, including Subscriptions, Advertisements, &c., to* THE SUB-EDITOR, Dr NORMAN WALKER, 7 *Manor Place, Edinburgh.*

THE SCOTTISH
MEDICAL AND SURGICAL
JOURNAL

EDINBURGH UNIVERSITY GRADUATION ADDRESS

Delivered on Saturday, 27th July 1901

By JOHN WYLLIE, M.D., F.R.C.P.Ed., LL.D.,
Professor of Medicine in the University of Edinburgh

FELLOW GRADUATES,—Time, which brings us all so many changes, has brought for you to-day an event in your lives which will be always memorable to you. You have to-day become graduates of the University. In circumstances of becoming ceremony, your degrees have been conferred upon you by our revered Vice-Chancellor. Those of you who have already for some years been Bachelors of Medicine and Surgery, or Masters in Surgery, have to-day been promoted to the higher degree of Doctor of Medicine ; the majority have now become graduates in Medicine and Surgery for the first time.

This year it has fallen to my lot to say to you, on behalf of the Principal and Professors, some parting words of congratulation and of counsel.

We congratulate you upon the promotion which you have this day obtained. We rejoice with you to know that the strain of your examinations is over, and that you are now in possession of the reward which you have so long been working for. You have to-day made a great step in your professional development. You are now adult members of your profession, and are prepared to take upon yourselves the duties and responsibilities of professional work. We know that you are all eager to enter the arena of practical life. We trust and

believe that you will acquit yourselves worthily in the work which lies before you.

Fellow Graduates, I think if we were asked to name the two leading characteristics of the medical profession, we should name, as its first characteristic, its beneficence, and, as its second, its love of accurate scientific knowledge.

It is the beneficent business of our profession to help nature in the cure of disease, and also to search out, and if possible remove, the causes of disease. In both ways it aims at the prolongation of life, and the mitigation of suffering. All the departments of the profession are helpful in furthering these objects. The departments whose work is purely scientific are occupied with deep-lying facts and principles upon which practical medicine is largely founded. The Department of Public Health, whose special function is the prevention of disease, takes measures to guard the community from the spread of infectious fevers, and endeavours otherwise to prevent disease, by bringing about improvements in sanitation, and by the correction of overcrowding. But perhaps the beneficence of the profession is best of all exhibited in ordinary medical and surgical practice. The practitioner is continually called upon to be helpful. He is always required to do his best to cure or to comfort his patients. When, after good training, skill and confidence come with increasing experience, there come also an increasing sense of power to help, and a growing satisfaction in helping, which bring much happiness to the practitioner, and make his profession dear to him.

It must also be remembered that, as time goes on, and advances are made in the science and art of medicine, the power of the profession to do good is gradually being increased. Very remarkable are the advances which have been made in medicine, and more especially in surgery, during the last thirty years. They have brought it about that the practitioner of to-day has much more power to help the sick and the injured than had his predecessor even of the last generation.

This gradually increasing power to help is directly the outcome and product of that love of accurate scientific knowledge, which, I think, may be claimed as the second of the leading characteristics of the profession.

Great activity in the pursuit of scientific knowledge is

displayed in every department of medical work, as well as in all the physical sciences, from the study of which medicine has learned, and is always learning, so much that is valuable. Throughout the civilised world scientific investigators are working together in the pursuit of knowledge. They are accepting each other's conclusions if proved, and weighing them if doubtful, glad to add to the common store a new observation or discovery, from whatever country it may have come. In Europe and America, thousands of observers are at work, in private practice, in hospitals and in laboratories, investigating and recording their results for the benefit of the whole profession. Even distant Japan has of late years been adopting the methods of the West, and has made several notable contributions to the body of medical discovery. There is something inspiring in this catholicity of medical science, in this great brotherhood of medical observers who are adding continually to the value of medical knowledge, and are thereby augmenting the power of the profession to do good.

The habit of attaching so much value to accurate scientific knowledge cannot fail to have a marked influence upon the character of the individual members of the profession. Now that your curriculum as students is over, you may well look back upon it, and consider how your studies have nourished your minds, and furthered your mental development. There is authority for the opinion that to pass through the full course of study for a degree in medicine affords as good an education as it is possible to have. Though this opinion might be disputed, no one who has had the experience of a medical education can be surprised that it has been entertained. Consider how each of your subjects of study has brought you in contact with fact and nature; how each has unfolded to you the accumulated knowledge of many generations; how, in connection with each, the facts have been collected and arranged into a harmonious whole, so that the general plan can be comprehended with little effort, though the details cannot be mastered without much labour. You have thus been introduced to the sciences of Chemistry and Physics, Botany and Zoology. You have entered fully into the subjects of Anatomy, Physiology, Pathology and Materia Medica. You have finished your curriculum by studying the practical subjects, systematically in the class-

rooms of the University, and clinically in the wards of the Royal Infirmary. Surely the young doctor is fortunate in having an education which is so comprehensive, and which teaches him so much regarding the facts and the laws of nature. An education which provides so solid a basis of fact upon which to ground opinions, is surely one which ought to favour the development in the mind of an insight that is more than common, and of a judgment that is sound as well as charitable. That it does exercise such an influence upon the medical mind is proved, I think, by the history of the profession. If we go back, for example, about two and a half centuries, to the time when the popular mind was overmastered by superstitious delusions connected with the belief in witchcraft, we shall find members of our profession among the few enlightened men who recognised the real nature of these delusions, and tried to free the minds of their fellow-citizens from them. In later times, again, members of our profession, actuated by the spirit of this charity which comes of knowledge, have taken an important part in those other humane movements which have persuaded the State to deal more generously with the poor, and the law to be less severe in its punishment of the criminal. In our own day, we often find, in the course of criminal trials, that medical evidence pleads some circumstance in the heredity, or in the mental condition of the criminal, which calls for consideration. Thus, with increasing enlightenment, an increasing charity has brought it about that many an unfortunate person, who is criminal only because deranged in mind, and who yet, in former times, would have suffered severe punishment, is now in mercy and in real justice, consigned as a patient to the care of the medical alienist. The medical profession has taken a part in bringing about this beneficent change. Its charity, like its insight, is due to knowledge. It is largely due to direct observation of the effects of heredity and environment upon human character and action.

Fellow Graduates, I feel sure that, in your own minds, you are well pleased that the period of your training as students has been spent in this city and in this University. This ancient city is well fitted for student-life. There is a quiet and freshness about it which are probably not to be found in any other city with so great a population. The hills surround it,

the sea is near it, and the country actually invades it. A great additional interest is given to the city by the history and the monuments of its past. You will, I doubt not, all your lives, have the image of this city deeply engraved in your memories.

I am not going to make invidious comparisons between the medical school of this University and the other great medical schools of the kingdom. We are bound to hold these sister schools in deep respect, knowing how great are their traditions and their services, and how excellent their equipment. Yet I think you must be well pleased to be graduates of the University of Edinburgh. When you have leisure to look into the history of the University, as set forth in the valuable work of the late Sir Alexander Grant, you will be able to form for yourselves an idea of the position of its school of medicine, and an estimate of the work it has done in furthering the improvement of medical education, and in elevating the status of the medical profession. When, also, you come to study the history of other medical schools, you will not fail to make note of the fact that this University has the honour to claim as its graduates not a few of the great teachers who have flourished in these schools, and have contributed to make them famous. I may not say more regarding the position of the medical school of this University, but I think I may, in a spirit of gratitude, recall to your minds how much has been done of late years, and is being done at present, to keep the medical school in a state of high equipment and efficiency.

It is only about twenty years ago since the splendid New University Buildings, in which you have been educated, were erected. They were reared on the initiative, and largely by the efforts of the late Principal, Sir Alexander Grant, and of an able Committee who associated themselves with him, and continued the work after his lamented decease. Sir Alexander Grant and this Committee made an appeal for aid to all friends of the University, in the United Kingdom, in the Colonies and in India; and, in generous response to this appeal, came the funds by which the buildings were erected. In future histories of the University, it is certain that the labours of Sir Alexander Grant and of the New University

Buildings Committee will always receive their meed of grateful acknowledgment.

Next in order of time came the noble gift, by Mr M'Ewan, of the beautiful hall in which we are now assembled, a gift which will ever be associated with the name of the donor, and be a permanent monument of his generosity.

Another beautiful gift has, with appropriate ceremony, been handed over to the University only a week ago. It is that of the new physiological laboratory, which has been given to the University by Mrs Cox, widow of the late respected Member of Parliament for South Edinburgh. The gift is presented by Mrs Cox in memory of her father, the late eminent professor of physiology and clinical medicine, Dr John Hughes Bennett.

It is no secret that still another splendid gift is being prepared for the University. I refer to the Public Health Institute which is to be presented to the University by Sir John Usher. When completed it will be under the management of the Professor of Public Health, and will be a great boon to students of medicine—particularly to those who are qualifying for degrees in Public Health.

The crowning gift of all is that which has so lately been bestowed upon the Universities of Scotland by Mr Carnegie. It is unparalleled in its munificence. Besides giving, under certain conditions, generous financial aid to students, it gives promise of an excellence of equipment in the scientific departments of the Universities of Scotland which will leave nothing to be desired. It also provides for the establishment of scholarships for the encouragement of research. Further, it promises to bring about in the Universities, the foundation of new chairs and lectureships, dealing with scientific subjects, and with subjects related to commercial and technical education. It will thus extend the sphere of University work and enhance the value of the Universities to the general community.

Subject to the general plan and conditions laid down by the donor, the distribution and disposal of the great funds which will be derived from Mr Carnegie's gift have, as you know, been placed in the hands of a body of Trustees which commands the respect and confidence of the country. To all friends of this University it must be a matter of satisfaction that Professor Sir William Turner has been elected to represent the

University upon this important Trust. Remembering his many services to the University, and the important work he did as a member of the New University Buildings Committee, all must feel that, with Sir William upon the Board of Trustees, the interests of the University will be well and fairly represented.

Let us hope that the benefactors of the University who have bestowed upon it these valuable gifts may have the satisfaction of watching for many years the good work done in the University by aid of their remarkable beneficence.

Fellow Graduates, I should like now to say a few words having reference to your professional future. In no long time you will be all at work in the various departments of the profession. Science will attract some of you, and practice others. Our profession fortunately provides scope for a great variety of talents.

As the great majority of you will engage in practice, I have been considering if I could submit to you any suggestions that might be of value to young practitioners. Of those which have occurred to my mind, I have selected two.

The first has reference to a humble phase of your professional work—I mean its business phase. I recommend you to adopt, from the first, or if necessary to devise for yourselves, good business-like methods of arranging your daily work, methods that will help you to be punctual in attending to your engagements, and that will make it impossible for you to be forgetful of them. Be exact and methodical in all matters belonging to the business phase of your work. If you should fail to be so, you would be worried by such matters, and an element of slackness and incompleteness would invade your work, and come perhaps to affect it even in its higher departments. I have known good men succeed but indifferently in practice, because they had never learned to be punctual and business-like. I therefore venture to ask you to pay attention to this matter at the beginning of your professional life.

The other suggestion I wish to make to you is that, in the discharge of your duties, you should not be too reckless of your own health. I know, of course, that you will be called upon to expose yourselves to many risks—to the risk of infection, for example, and to those of fatigue and exposure to weather. Some of you may have to run the risk of living in unhealthy

climates; others of you may even be called upon, like so many of your predecessors, to face great danger on the field of battle. In some of these circumstances you will not think of yourselves at all, but only of your duty. In most circumstances, however, it will be well for you to take reasonable care of your health, and, while doing your duty thoroughly, to run no risk that is quite unnecessary. I want particularly to warn you about the strain which may be put upon you at the beginning of your professional life. Some of you may find yourselves engaged as assistants in densely populated districts, and be called upon to visit very many patients during the day, and attend to others in the night. The strain may be greater than your strength can bear. I have known it prove disastrous to the health of several young practitioners. In such circumstances do not go on struggling with the work until your health actually breaks down. Resign the post in time, and seek lighter employment. With gradual training the work will soon become easier to you, and you will learn to bear the strain even of heavy practice without danger to yourselves.

Even when you are settled in life, and are becoming experienced practitioners, it will be well for you to give your health the benefit it will receive from a reasonable amount of attention to recreation. Very various are the ways in which busy members of our profession seek recreation. Some find it in games, such as that of golf; others in sports, such as those of angling, shooting, or fox-hunting. Two of the most famous Edinburgh surgeons of the past had tastes in recreation which were in strong contrast. Liston was devoted to fox-hunting, and Syme delighted in the quiet pleasures of his famous garden. I shall not pursue the subject further, but I venture to suggest to you that, if you have already acquired a liking for some one of the more gentle of these pastimes, you should not let it die out as you grow older, but keep it as something worth keeping. It will help to maintain you in good health and good tone.

Mental recreation you may, of course, obtain in many ways besides in the enjoyment of these pastimes. You will find it in the society of your friends. You will also find much of it in the reading of general literature. There is, of course, in general literature a great choice of subjects for reading.

Probably the favourite subjects with our profession are history and light literature. Strong minds, such as those of Darwin and Macaulay, have often found their chief recreation in the reading of light literature; and, when the mind is fatigued, it is almost the only kind of reading that is allowable. History, also, is a restful subject for study. Though the events which it records are often full of trouble and turmoil, they are separated from us by an interval of time, and are thus, as it were, softened to us by distance, so that we can watch them with quiet interest. The department of history known as archæology also attracts many members of our profession, a cause of its attraction being that the interest of living in any district is always greatly increased when one has acquired a good knowledge of its local history and antiquities. The late Sir James Young Simpson, one of the very busiest of men, devoted his leisure hours to the study of archæology. In his case, this study bore fruit, in the form of a series of papers upon antiquarian subjects, which are of permanent value. But Sir James Simpson's mind was one of phenomenal activity. For nearly all doctors who may wish to write for publication, it is a good rule to write only on professional subjects. Oliver Wendell Holmes, himself poet and philosopher as well as medical professor, warns young doctors who may wish to distinguish themselves in their profession, against aiming at distinction as writers on general subjects. "I warn you," he says, "against all ambitious aspirations outside of your profession. Medicine is the most difficult of sciences, and the most laborious of arts. It will task all your power of body and mind if you are faithful to it. Do not . . . linger by the enchanted streams of literature, nor dig in far-off fields for the hidden waters of alien sciences. The great practitioners are generally those who concentrate all their powers upon their business. If there have been, and are, brilliant exceptions, it is only in virtue of extraordinary gifts and industry, to which very few are equal."

Though this eloquent warning is chiefly meant for those who aspire to write upon general subjects, we shall all do well to bear it in mind whenever we are tempted to devote too much of our time to general reading. General reading, however, at times of leisure, is of great value to members of our profession.

It helps towards general culture, and it prevents the cramping of the faculties which is so apt to result from exclusive attention to professional work and literature. By recreating the mind and keeping it fresh and active, it makes the doctor all the more capable and alert in the discharge of his daily duties as a practitioner.

And now, fellow graduates, I must not detain you longer. Your teachers share with you to-day in your happiness and satisfaction. They know that you are proud of the profession of which you are now members. They hope that many of you will rise to distinction in it. They trust that all of you will carry high the honour of your profession, scorning all quackery and false pretence, and keeping ever in the path of rectitude. Winning honour for yourselves, as good doctors and good citizens, you will also reflect honour upon the University which has reared you.

FIFTEEN RECENT CASES OF OPERATION FOR APPENDICITIS

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DURING the last few months I have operated on fifteen cases of appendicitis. Some of these cases present points of interest.

Out of the fifteen cases, seven were operated upon during a "quiet interval": all these cases recovered. These patients were all males, in age varying from eighteen to fifty-nine years. Four of them had only had one attack; two of them had had two attacks; and in the remaining case there had been several attacks. In five cases the adhesions were slight, in two the adhesions were extensive and firm, and the operation correspondingly difficult.

In one of these latter cases the patient had had several attacks; in the other he had had only one attack, but that a severe one. The remaining eight cases were operated upon during the acute stage, and of these, four died. It may be interesting to examine these cases more in detail; first, however, let us shortly discuss the first series of seven cases operated upon during an interval.

In one case (Mr C., aged 18), the patient had suffered from one well-marked and somewhat severe attack. He made a perfect recovery from this illness and had none of the discomfort left behind which one so often meets with; but as he was going to India, where he might be out of reach of efficient surgical assistance, he determined to have the operation done. The appendix was found strictured at about its middle, and its distal end was converted into a fibrous cord. The operation was extremely simple, and he made a rapid recovery.

In the remaining six cases the patients were all, more or less, uncomfortable and out of health. Complaints of dragging pains in the abdomen, flatulence, constipation and general discomfort were made, and operation was consequently imperative. In cases of this kind there can scarcely be a question in anybody's mind as to the advisability of operation, but as to the general practice of operating after a *first* attack, the general opinion seems to be against it; many surgeons and nearly all physicians advising that two or three attacks should take place before operation is done. Whether this opinion is always wise or not, is, I believe, open to serious question, and for the following reasons:—

1. A large percentage of all cases, estimated by various writers at from 25 to 40 per cent., have second attacks. In all but the mildest cases a second attack is the usual rule.

2. No one can predict that such a second attack will not be perforative nor prove fatal, in spite of treatment. Operative treatment during the acute attack is, of course, a much more serious undertaking than when done in an interval.

3. Every attack adds to the extent and strength of the adhesions, and thus increases the difficulties and dangers of the operation, sometimes to a very great degree.

4. The mortality of the operation when done in an interval, especially after a first attack when the adhesions are at a minimum, is comparatively trifling, say from 1 to 2 per cent. at the outside, in the hands of competent surgeons. I once lost one such case, but the patient had suffered during several years from an enormous number of attacks, and the operation was prolonged and difficult.

Of the eight remaining cases operated on during the acute stage, four recovered and four died.

(*a*) *Fatal Cases.*

1. A boy, aged 13, and (2) a girl, aged 24, operated on immediately after coming under my notice on the fifth and fourth day of the attack respectively. In both these cases there was perforation with general septic peritonitis and profound toxæmia, as evidenced by a running pulse, profuse sweats, rigors, etc. The abdominal cavity contained a large quantity of fœtid pus. In both these cases there was a cessation of pain on the second day, due presumably to gangrene. Cessation of pain is of course often a favourable symptom, but only so when it is accompanied by other concomitant signs of improvement.

3. A boy, aged 8, operated on about the tenth day of the attack. This case was very disappointing. A localised superficial abscess was found and opened without any disturbance whatever of deeper parts, as no effort was made to remove the appendix; the case looked in every way likely to recover; the boy, however, died in about forty-eight hours. I regret not having explored the pelvis, for, from subsequent experience, I believe I should probably have found a second abscess there, and it is not improbable that this was the cause of death. This point will be referred to again shortly. It is my experience that young children do not stand these operations as well as older patients.

4. A female, aged 12, operated on on the eighth day. General peritonitis and toxæmia present. The abdomen was drained, but she sank a few hours after operation.

(*b*) *Successful Cases.*

1. A male, aged 24, operated on on the fourth day. Continued vomiting, obstruction of the bowels, and a pulse of 120 indicated the propriety of operation. The appendix was found perforated; there was local peritonitis and commencing abscess formation. The appendix was not removed, as it was incorporated in the wall of the abscess. He made a somewhat slow but satisfactory recovery, and like most of such cases has had no further trouble, the appendix becoming obliterated.

2. A female, aged 44, operated on on the seventh day. General peritonitis was present, and a large quantity of turbid fluid was removed from Douglas' pouch, in addition to the pus removed from the abscess round the appendix itself. The general abdominal cavity was washed out, and drained by a separate tube. After a hard fight she made a perfect recovery.

3. A male, aged 27, operated on during his second attack. For some ten days the symptoms were comparatively slight, but as there then appeared evidences of an abscess in the right iliac fossa, the operation was done. The abscess was superficial, and was evacuated without any disturbance of deeper parts, the appendix not being sought for. He was much relieved by the operation, and remained well for three days, but then the case took a bad turn, the pulse and temperature went up, his tongue became dry, micturition was difficult and attended with pain (a frequent sign of suppuration in the pelvis), and the bowels became obstructed. An incision was accordingly made in the middle line half way between the umbilicus and symphysis, and a large abscess was opened, quite separate from the original abscess round the appendix. For purposes of better drainage, and for the removal of the appendix, the original wound over the appendix was opened up, when it was found that the appendix was gangrenous in its whole length, and the gangrene extended over a small area of the large intestine surrounding the base of the appendix. The intestine was consequently brought to the surface, and an artificial anus established. He made a good recovery, and four months later enterectomy was performed for the cure of the artificial anus, the ileum being connected to the ascending colon with a Mayo-Robson's bobbin. He made a speedy recovery, and left hospital a few days ago in perfect health.

It was interesting to note that the bobbin, which was retained for nine days, was passed whole, and, except in the matter of colour, unaltered.

This case, and several others like it, have impressed upon me the frequency with which a separate collection of pus forms in the abdomen, particularly in the most dependent part of the pelvis, in addition to, and entirely separated from, the abscess in immediate relation to the appendix. Possibly, while the patient is still going about, organisms from the inflamed

appendix find their way to the lowest point in the abdominal cavity, and form there a separate focus of suppuration; then adhesions from round the appendix and a second abscess occurs there, which is shut off from the general abdominal cavity. I believe it to be good practice in every case of suspected or evident abscess round the appendix to search the pelvis also, and I think this should be done in a particular way. It is certainly dangerous to open a peri-appendicular abscess in such a way as to allow its pus to foul the general peritoneal cavity; consequently the pelvis should be explored by a separate mesial incision. And as this cannot so safely be done *after* the appendicular abscess is opened, and the operator's fingers and instruments are fouled, it should be done *first.* A small, one-inch incision is all that is necessary: a Keith's glass drainage tube is slipped into the bottom of the pelvis, and a little sterile saline solution or boric lotion injected. If pus wells up in the tube, keep the tube in, wash out and drain the pelvis: if no pus be found, take out the tube, stitch up and collodionise the small incision. No harm can come from this little operation, and if pus be found, a frequent source of disappointment and failure is avoided. Certain unfortunate cases occur where second abscesses form, not in the bottom of the pelvis, but contiguous to, perhaps behind, the appendicular abscess itself. These cases are difficult to deal with, and though, certainly, exploration of the pelvis in the manner suggested might not meet the difficulty, if such a second abscess be fortunately found the mesial incision in no way complicates the case, and may be convenient for more effectual lavage and drainage of the abdominal cavity.

4. A lady, aged 33, operated on about fifteen hours after the commencement of her first attack. This was a most interesting case. I believe that of all the symptoms of appendicitis (I am not including the so-called "fulminating" cases at present) those which are of the greatest service in indicating whether or not the disease is going to run an unfavourable course are (*a*) the persistence of vomiting after the first few hours, and (*b*) a pulse remaining rapid, say from 115 to 120. (The temperature varies much, in the worst cases is often subnormal, and is not, in itself, a reliable symptom.) This patient, when I saw her fifteen hours after the illness

began, was vomiting every mouthful she swallowed, and her pulse was about 118. She had no pain; her temperature was normal, and the abdomen, though rigid, was not distended. She did not look very ill, and she said she was, except for the sickness, very fairly comfortable. Judging, however, from the vomiting and pulse that the case was going to be a bad one, and as she was a considerable distance from town, I decided to operate at once. I found the appendix much swollen, but as there were as yet no adhesions, I was easily able to lift the cæcum and appendix out of the wound, when the appendix stood straight up like the erect penis. I proceeded to remove it in the usual way by turning back a cuff of peritoneum, when I noticed that the mucous canal was absolutely black and gangrenous: when I tried to catch it with forceps, the tissue came away in the blades of the instrument, being rotten and friable. The gangrenous tube was consequently cut off short and its end tucked in, and the peritoneal cuff sewn doubly over it. The patient did not give us a moment's anxiety, and made a rapid recovery. It cannot be doubted but that this patient was saved from a serious and possibly fatal illness by early surgical interference. There is a great difference of opinion as to the proper time for operation in cases of appendicitis. The worst time is probably from the third to the fifth or sixth day, when the parts round the appendix are in a condition of septic infection and acute inflammation, but where secure adhesions have not yet shut off these parts from the general peritoneal cavity: it is better, unless one's hand is forced by urgent symptoms, to wait till the abscess and its protective wall is well formed: but best and safest of all, if one could only believe it, is to operate as soon as ever a severe case is recognised as such, *i.e.* in the first few hours, and thus anticipate and prevent the most serious risks of this treacherous disease.

OPERATIVE INTERFERENCE IN CASES OF STRICTURE OF THE LARGE INTESTINE

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THIS paper may be regarded as supplementary to that read at the Society in 1895 (see Vol. 14 of the "Transactions of the Medico-Chirurgical Society of Edinburgh"), and is intended to give the results of extended experience and the after-history of the cases formerly narrated.

We may with some advantage generalise on a few preliminary points of interest. The diagnosis of stricture of the large intestine has rarely presented difficulties. The symptoms observed were mainly irregular action of the bowel, the presence of localised tympanites, the palpation of a somewhat mobile nodulated swelling, often tender on pressure, and occasional rises of temperature, due to septic absorption. The febrile attacks simulate those of influenza, and patients sometimes date their symptoms from a supposed attack of influenza. Occasional errors in diagnosis have arisen: thus acute appendicitis has been found when carcinoma was expected; a case of carcinoma has been recommended as appendicitis; and in a case where diagnosis was doubtful, an unsuspected ectopic gestation was revealed. Again it is not always easy to discriminate between immobile neoplasms of the ascending colon, of the kidney or of the retroperitoneal tissue.

The mode of operation remains much the same as described in the former paper. After the usual purification of parts prior to incision, active antiseptics are discarded and warm sterile salt solution and sterile gauze swabs are alone employed, except in the case of special applications to the cut intestinal surfaces. Access is generally gained by incision in the left linea semilunaris directly into the peritoneal cavity. When necessary, more room can be obtained by a second incision carried outwards at right angles. The tumour can now be palpated and its relations established. Adherent omentum is severed and ligatured. The mass is withdrawn from the abdomen and packed round with gauze so that all subsequent

FIG. 1.

FIG. 3.

FIG. 2.

FIG. 4.

F. M. C. del.

PLATE I.—TO ILLUSTRATE MR CAIRD'S PAPER.

FIG. 1.—Case 2. Malignant stricture of ascending colon. Parts removed at operation. The strictured area divided longitudinally and turned back to show the narrowed channel. Adherent omentum, *a*.

FIG. 2.—Case 3. Cæcum laid open to show ulcerating malignant stricture.

FIG. 3.—Case 4. Cæcum laid open, projecting carcinomatous nodule corresponding to adherent tip of appendix *a*.

FIG. 4.—From same preparation. Back view, tip of appendix *a*.

procedure may be conducted externally to the shut off peritoneal cavity, and any direct interference with the septic interior of the intestine is postponed.

If the gut cannot be withdrawn the mesenteric vessels and adhesions should be divided *in situ* between double ligatures or between pressure forceps, and the free loop of bowel with the tumour can now be pulled out. It is advisable to divide the mesenteries well away from the gut so as to remove as much lymphatic tissue as possible. This means that large vessels have to be cut, and hence the greatest care should be taken in ligaturing firmly. Forceps must be trustworthy, and each mass of tissue and veins should be secured carefully *seriatim*. If the gut cannot be readily pulled out because of short mesenteries and adhesions, a couple of intestinal clamp forceps should be applied to the healthy freed colon well beyond the distal end of the tumour, a quarter of an inch apart. The bayonet-shaped clamps introduced by Conrad Brunner are excellent for this purpose, when improved by a peg to prevent the blades crossing. The gut is now divided between the clamps, whereupon the cut intestinal surfaces in the grasp of the clamps should be turned up and disinfected. This is done by rubbing a little pure carbolic acid over them, drying it off with gauze and smearing on some iodoform. The clamps and contained gut are next meanwhile wrapped up in gauze to obviate every chance of sepsis. The free end of the bowel is then pulled out and the various adhesions, mesenteries, and vessels are successively ligatured and divided, as one works round the tumour, which is thus gradually freed from its surroundings until healthy colon or ileum is reached and severed between a second pair of clamps, and removed along with the tumour.

The proximal end of the gut in the clamp is of course treated similarly to the distal end and at once enveloped in gauze. Any enlarged lymphatic glands should be removed. The divided ends of the gut are now exposed, still in the grasp of the clamps. They should be approximated to note if the cut sections correspond in size and can readily be brought together. As a rule, owing to the marked distention and hypertrophy above the stricture, and to the atrophy beyond, there is less disparity than one would expect; or again the

difficulty may be to accommodate the huge ileum to the somewhat atrophied colon. Fresh gauze is once more packed around the gut, the clamps are removed, and one may with advantage trim off part of the compressed intestine. There is but little bleeding. Should the cut sections differ widely in calibre, the smaller may be stretched with dressing forceps; or the two ends may be united after the manner employed to join stomach and duodenum in pylorectomy. End to end suture is made use of much as formerly. Three provisional stay sutures are introduced which pass through the whole thickness of the gut from the peritoneal aspect of the one section and back from the mucous surface outward to the peritoneal aspect of the other. The first and most important stay should be introduced at the mesenteric margin of the bowel and the other two equi-distant from it, so that the circumference of the gut is divided into thirds. The two extremities of the first stay knot are preserved: one lies towards the anterior aspect of the bowel, the other is pulled through the mesenteric gap and thus lies posterior to the gut. It is convenient to cut one extremity of the remaining two stay knots short, thus leaving one long free end. The end of the second suture and the anterior end of the first is held tense, and a continuous suture is now carried through the whole thickness of the gut from the first to the second stay knot. The second and third suture ends are now held tense and the suture continued to close the second segment of the circle, after which there only remains to make the third segment tense, which is now done by pulling on the third stay knot and the posterior end of the first one. The bowel is thus rotated, and the continuous suture travels on and completes the union. A continuous Lembert suture is next carried all the way round, completely covering in the former deep sutures, and the stay knots once more come into play. All the sutures are now cut short. Additional Lembert sutures are inserted over the site of the stay knots and at any other point where it is deemed necessary, for example, in the vicinity of the mesentery. We have generally made the so-called blanket, button-hole, or sailmaker stitch, and have used the finest intestinal silk and the somewhat stouter No. 1 Chinese twist for stay knots. As a rule the wound may now be closed after the routine fashion, the use of the iodoform gauze tampon

or the drainage tube depending upon the special features of individual cases.

A.—*Primary Resection and Suture for Malignant Stricture of Ileo-Cæcal Valve or Ascending Colon.*

1.[1] Miss K., æt. 47. Ileo-cæcal carcinoma. Nine inches removed, including portion of ileum, 1893. The tumour was a mass of columnar celled carcinoma about the size of a golf ball. (Pl. III. Fig. 3.) Wound closed without drain. Flatus third day. Healed well. Patient enjoys good health now.

2. Mrs P., æt. 40. Stricture of ascending colon. Action of bowels very irregular; repeated attacks of threatened obstruction. Excision of growth, including 2 inches of ileum and cæcum; in all, 10 inches; February 1897. The tumour, carcinoma, formed a solid ring-like structure 1½ inches long, traversed by a central channel which barely admitted an ordinary lead pencil. A mass of adherent omentum had also to be removed. No drainage. Patient made an excellent recovery. The prognosis was, however, bad, since on microscopic examination a small nest of cancer cells were found remote in a portion of the removed mesocolon, and the patient succumbed, as was to be expected, a year after from secondary growths in the liver.

3. Mr W. M., æt. 67. Very similar in site to last case, but the intestine was adherent to the abdominal wall. Ten inches of bowel from the ileum onwards were removed, as also a considerable area of parietal peritoneum and transversalis muscle, on November 11th, 1896. (Pl. I. Fig. 2.) Much difficulty was experienced in uniting the colon and ileum. Wound drained with tube and iodoform gauze. A fæcal fistula formed, and recovery was somewhat slow. The patient was doing well in his own home when he was carried off by an epidemic of influenza on 10th January 1897.

4. Mr R. C., æt. 28. The patient had a hard firm mass in the appendix region which was removed by division of the ileum and the ascending colon and separation of the various adhesions. A pair of forceps slipped from off a large vein in

[1] See vol. xiv. "Trans. Med. Chir. Soc. of Edinburgh."

the mesocolon and deluged the wound with blood, but the vessel was speedily secured. End to end suture. No drain. The perforation proved to be an early carcinoma of the tip of the appendix, which structure was reflected upon and adherent to the posterior aspect of the cæcum and projected as a hard mass into the lumen of the gut. (Pl. I. Figs. 3 and 4.) Operation, August 1896. Healed well. Patient has enjoyed good health since.

5. Mrs M., æt. 40. Patient has a large nodular hard mass to right of umbilicus filling up the lumbar region; painful on exertion, tender, rather fixed, and of three months' duration. There is no marked irregularity of the bowels, but she experiences some difficulty in micturition. Operation 23rd April 1901. Incision in linea semilunaris and at right angles to it. Tumour separated from liver, duodenum and omentum; removed with large piece of mesocolon. Kidney freely exposed and stripped. End to end union of ileum to hepatic flexure of colon. Drainage. The patient became restless and sick. On the following day the stomach was washed out on account of continuous vomiting of coffee ground character. She sank on April 25th. T. 103, P. 140, R. 44. The sectio showed congestion of both kidneys; old and recent endocarditis, antecedent to the operation; a peculiar swollen condition of the pancreas and marked *post-mortem* digestion of the stomach and œsophagus.

6. Mr A. C., æt. 32. Supposed to be suffering from appendicitis, having suffered from localised pain and vomiting two years ago and again five weeks ago. Formerly constipated, the bowels now act well without medicine. There is a mobile globular swelling about the size of an orange in line with the highest point of the iliac crest internal to the anterior superior spine. Immediately internal to this dull area was a resonant tense swelling which dispersed under pressure and was correctly thought to be flatus behind an ileo-cæcal stricture. Operation, 10th April 1901. A dense tight annular stricture of the ileo-cæcal valve found. (Pl. III. Fig. 2.) The ileum was hypertrophied to the dimensions of the great gut, and the colon was small and thin. End to end suture. No drain. Flatus third day. Healed well. Home 4th May.

FIG. 1.

FIG. 3.

FIG. 2.

FIG. 4.

F. M. C. del.

PLATE II.—TO ILLUSTRATE MR CAIRD'S PAPER.

FIGS. 1 and 2.—Case 12. Carcinoma of sigmoid flexure. Shows dilatation above the stricture. The intermediate segment, half an inch in thickness, which barely admitted a bristle, is not represented.

FIG. 3.—From the same case. Shows gangrene of the bowel extending above and below the intact line of sutures. Rupture has taken place close to the line of demarcation.

FIG. 4.—Case 15. Typical ulcerating carcinoma of the sigmoid flexure.

B.—*Resection. Artificial Anus. Incomplete Operation.*

7. Mrs C., æt. 59. Three years ago noticed a small swelling about the region of the appendix : she had then pain in the thigh, frequency of micturition and pain before the act. This was followed in eighteen months by diarrhœa which has since persisted, and she is much thinner. There is now a hard firm mass in the region of the ascending colon as large as a couple of fists and rather fixed. Operation, December 1901. Gut divided at ileum and hepatic flexure of colon, a mass of omentum and mesocolon clamped and cut, and the huge tumour was turned outwards. It was then found to be adherent to the kidney and to the duodenum. Part of the kidney and a small portion of the duodenum had to be removed along with the growth. There was troublesome venous hæmorrhage which was thought to be satisfactorily arrested. It was decided to tie a couple of Paul's tubes into the divided colon and ileum, and at a later date to close the artificial anus. The patient had to be transported a considerable distance and to be carried in a lift to her ward. On arrival there she was found moribund from internal hæmorrhage. The sectio revealed a rent in a large tributary of the portal vein which had not been secured.

C.—*Lateral Anastomosis for Ileo-Cæcal Tumour.*

8. Mr G. F., æt. 35, five weeks ago felt a sharp shooting pain in the right groin, accompanied by nausea. This passed off in three or four hours, and patient took to bed for one day. He resumed work, but pain has continued ever since, increased on exertion, keeping him from sleeping, and extending down the front of the thigh and sometimes through to his back. He cannot lie on the left side, and has a dragging sensation on the right side. There is a hard, oval, tender swelling in the right groin. The bowels are regular. He has lost weight during the last five weeks. Operation, 6th March 1901. A large mass, the size of the fist, firm and nodular, was found in the inner aspect of the psoas muscle. It lay over the vessels adherent to them, and to the anterior crural nerve, and was incorporated with the ileum close up to the ileo-cæcal valve.

Removal being out of the question, a coil of ileum above the tumour was laid alongside the upper part of the cæcum, and a lateral anastomosis effected. Flatus passed the following day. Suppuration of wound, 14th May. Left hospital June 11th.

D.—*Primary Resection and Suture for Innocent Ileo-Cæcal Stricture.*

9. M. S., æt. 9. An emaciated boy with constant diarrhœa, "ladder" patterns, and tumid abdomen; tender ileo-cæcal region. Removal of stricture with part of ileum and colon, 1899. End to end suture. No drain. Patient well, 1900.

E.—*Resection and Secondary Suture for Innocent Ileo-Cæcal Stricture.*

10.[1] Nellie S., æt. 7. Similar to above case. Excision of papillomatous stricture and adjacent gut (Pl. III. Fig. 1), 1st June 1895. End to end suture, 5th June 1895. Patient well, 1900.

F.—*Carcinoma of the Sigmoid Flexure. Primary Resection and Suture.*

11. Mr G. S., æt. 36. Removal of carcinoma of sigmoid, freely mobile, size of fist, 5th August 1896. No drainage. Perfect recovery, death from secondary growths in liver, February 1897.

12. Mrs McK., æt. 58. A healthy-looking woman who began to suffer in February from a constant dull aching pain in the region of the left side of the abdomen, together with frequent paroxysms of more acute nature. There has been more or less constipation, the accumulation and passage of "wind" and of blood-stained mucus. She complains of increasing weakness and loss of weight. At the same time a lump was felt in the sigmoid region. It was plainly visible in May, and now is palpable as an irregular elastic fixed mass about the size of one's fist.

Primary resection and suture, 26th September 1898.

[1] See vol. xiv. "Trans. Med. Chir. Soc. of Edinburgh."

The tumour, a large villous looking columnar carcinoma (Pl. II. Figs. 1 and 2), was firmly adherent to the peritoneum over the psoas and ilium, and its removal entailed the exposure of a large extent of retroperitoneal cellular tissue. A considerable amount of mesocolon had also to be taken away, but the vascular supply of the gut was good, the trimmed margins bleeding freely prior to suture. The hugely dilated oval extremity had to be partially closed before its lumen coincided with that of the small contracted distal extremity.

The patient progressed favourably and had a motion on the fifth day, and was passing flatus freely till 2nd October, when flatus ceased, she had pain over the cæcal region, and in the afternoon began to vomit a little. On the following day the pulse and respiration quickened, the abdomen moved well in respiration, no flatus passed, but fæcal matter was removed by enemata. A drainage tube was inserted into the wound and fœtid pus escaped. Next day she rapidly began to sink, free fæces passed from the wound, which was now opened up and washed out, and the patient died in the evening, 5th October.

At the sectio it was found that the gut was gangrenous over an area of about 2 inches. The gangrene began 1 inch *above* the level of the sutures, and here two or three large perforations ran into one as the parts were removed. The line of stitches remained intact. (Pl. II. Fig. 3.) The fæcal matter lay in the vicinity of the rupture, shut off by adhesions from the general peritoneal cavity. It is worthy of note that the patient had difficulty of micturition, and that the catheter had to be used from 1st October onwards.

13. Mr S., æt. 38. Observed a rounded mobile swelling in the sigmoid region in January 1900. He had some irregularity of the bowels, and the tumour increased, while he lost strength and weight. Resection, end to end suture, June 1900. The tumour was firmly adherent to surrounding coils of gut and peritoneum, and with difficulty was removed under peculiarly disadvantageous circumstances. Drainage. Patient at present strong and well.

G.—*Carcinoma of the Sigmoid Flexure. Resection and Secondary Suture.*

14.[1] Mr D., æt. 60. Anterior colostomy for obstruction, 19th March 1895, followed by resection of gut and end to end suture, 9th April. Patient made a good recovery, gained weight, and was in excellent health when, ten months after, sudden obstruction again developed. A second colostomy only gave temporary relief. No tumour, only adhesions discovered, and he died 17th January 1896. Permission for an autopsy was refused.

15. Mrs T., æt. 65. Patient suffered from obstruction, for which colosomy was performed at a period when she was already very weak. The bowel was acting freely through the artificial anus, but the patient showed signs of sinking from septic absorption, and yet had no peritonitis. Fearing that this might be due to continuous absorption from the ulcerated surface of the typical carcinomatous stricture (Pl. II. Fig. 4) which had caused the obstruction, the tumour was pulled forth on the second day, removed, and end to end suture applied. The patient only survived a few hours.

16. Mrs J., æt. 47. A uniformly healthy woman, who was suddenly seized with vomiting and obstruction. The vomiting ceased three days ago, but there has been no passage of flatus for eight days. She is greatly distended, but suffers little. Anterior colostomy was performed 5th September. An annular sigmoid stricture could be felt. Resection and suture, 8th September. Drain and iodoform tampon. Patient had a good night and passed flatus, but that evening became delirious, and the pulse rose to 120; the respirations were not quickened, and the abdominal movements were perfect. Transfusion was carried out with temporary benefit. The patient died 10th September, at 5.30.

Sectio. Not a trace of peritonitis; wound perfect; no leakage; nothing in pouch of Douglas, save a little serum; kidneys healthy. Death from cardiac failure.

17. Nellie B., æt. 39. Three weeks ago had severe attack of pain, constipation, and vomiting; the conditions on admission persists to a minor extent. She had a similar attack two

[1] See vol. xiv. "Trans. Med. Chir. Soc. of Edinburgh."

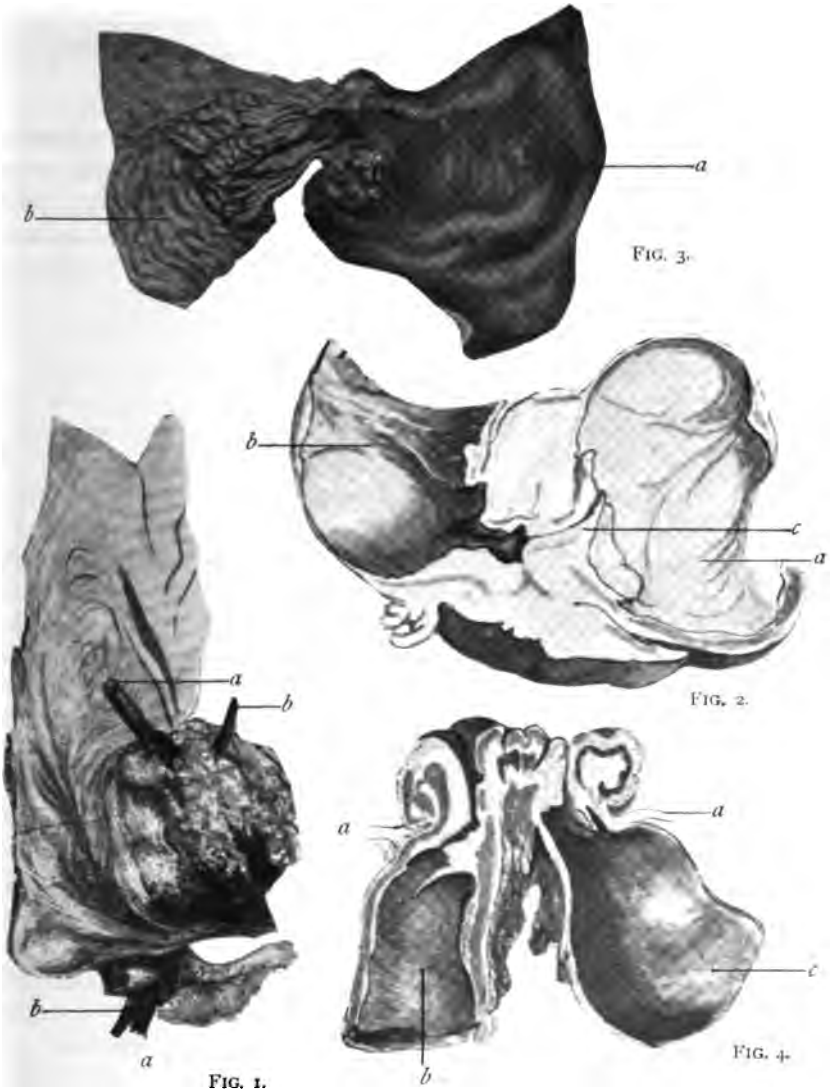

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PLATE III.—TO ILLUSTRATE MR CAIRD'S PAPER.

FIG. 1.—Case 1. Cæcum laid open shows fungating carcinomatous mass. This was traversed by two narrow channels into which drainage tubes have been passed from the ileum onwards, *a* and *b*.

FIG. 2.—Case 6. Ileo-cæcal region in longitudinal section. Distended small intestine *a*, rather atrophied large intestine *b*, very narrow communication *c*, through the midst of a dense stricture.

FIG. 3.—Case 10. Simple papillomatous ileo-cæcal stricture. Hypertrophied ileum *a*, atrophied cæcum and large intestine *b*.

FIG. 4.—Case 19. Artificial anus in longitudinal section. Level of skin *a*. Functioning oral end of gut *b*; note hypertrophy. Flaccid disused distal gut with atrophied walls *c*.

years ago, but in other respects has been strong and healthy. A mesial exploratory incision was made below the umbilicus and an annular sigmoid stricture found, which was now projected through the left linea semilunaris and the mesial wound closed. Resection and formation of artificial anus was carried out 3rd October 1900. Secondary end to end suture, 15th October. Drainage. Iodoform tampon. Small fæcal fistula, 25th October. This was healed in November. Patient now strong and well.

18. Mr J., æt 55, had anterior colostomy performed in December 1898, for obstruction due to an annular carcinoma of the sigmoid. It was intended to perform resection, but the patient left hospital and did not return till February 1901. He seems to have enjoyed good health of late, although the liver is somewhat enlarged. On introducing the finger into the distal aperture of the artificial anus the tumour was reached. Resection of the artificial anus and tumour with end to end suture, 15th February 1901. It was thought wise to drain the wound since there had been so much peritoneum stripped from off the iliac fossa in removing the tumour. Bowels acted two days after, the first action by the natural passage for two years. Stitches removed and healed, 10th March.

19. Mr A. M., æt. 56. About a year ago he suffered from constipation and passed some blood. There was no diarrhœa. For the last five or six months he has had violent pains in the left inguinal region, aggravated by aperients. There is a hard mass to the left of the middle line in the basis of the pelvis. Resection of the tumour and formation of artificial anus, January 30th, 1901. The growth was found fixed to the pelvic brim and its removal entailed much stripping of peritoneum. Resection of the artificial anus (Pl. III. Fig. 4), 20th March. The operation was prolonged and difficult from adhesions, and the wound was packed with an iodoform tampon: union was not perfect and a small fæcal fistula formed. For the closure of this he returned to hospital, and after unsuccessful attempts had been made he sank exhausted.

The sectio disclosed numerous large secondary growths in the liver.

H.—*Carcinoma of the Sigmoid Flexure. Resection. Artificial Anus. Incomplete Operation.*

20. Miss B., æt. 35. Suffering from seven days' obstruction, with, however, slight passage of flatus, vomiting, distended abdomen and ladder pattern. The cæcum very tender, nothing to be palpated, but it was stated that one tender spot in the left iliac region had been detected a couple of days ago. Her symptoms dated from five months back, when she was seized with pain in the cæcal region, since continuous, followed latterly by six weeks' constipation. Operation, 30th July. Incision over tender area through right linea semilunaris. Distended colon found, and the hand carried to the sigmoid flexure found it also distended above and below a typical annular malignant stricture. An incision was therefore made over this on the left side, and the tumour and loop of bowel pulled out. The right wound was then closed. The loop of bowel and tumour were then removed and a couple of Paul's tubes tied in. The artificial anus acted well, but the patient's pulse rose in frequency, she became delirious, and after lying unconscious for a couple of days, died on August 4th. There was no evidence of peritonitis or sepsis.

As far as the above cases go we may note that carcinoma affects the sexes in the same proportion, and that contrary to the experience of some others, the operative mortality is greater among women. Moreover our death-rate following resection and suture appears greater than it really is as far as operation is concerned, since three of the patients succumbed to auto-intoxication, the result of obstruction of the bowels, just as may happen after any colostomy. Hence it is a matter of regret that we attempted the union which was carried out in cases 15 and 16, although the result would still have been similar to that of number 20, where the patient died despite the surgeon's intervention. The fatal case 5 (cardiac failure) was due to our not recognising the bad general state of health which should have contra-indicated operation. The death from hæmorrhage was a calamity also which should have been avoided. The bleeding vessels had been carefully sought and secured; we were fully satisfied that not one had been missed. The probability is that the twisting of a coil of gut restrained the

bleeding while we were closing the duodenum, and that as the bowel returned to its normal position during the transit of the patient downstairs the venous rush took place. The gangrene of the intestine (12) is of great interest. It may be explained by some vascular thrombosis or kinking of the vessels during peristalsis, since it occurred late; the patient had been progressing well, and at the conclusion of the operation care was taken to ascertain that the parts were vascular. The case serves to support strongly the advantages of the Mikulicz iodoform tampon, and of the special method he has introduced for removing intestinal tumours. This is to withdraw the tumour and loop of bowel and leave it dependent from the wound, shutting off the peritoneal cavity. At the end of 36 to 72 hours, adhesions have formed and the mass may be removed, leaving an artificial anus, which is treated in about 14 days after with the special forceps introduced by Mikulicz for the spur, and the resulting fæcal fistula is next dealt with. In 12 cases so treated there was no instance of infective peritonitis.[1]

At present, experience leads one to believe that where there is *no obstruction*, the best treatment in stricture of the large intestine is primary resection, end to end suture and closure of the abdominal wound without drainage. If it be found true that the mortality rises to about 50 per cent., and that infective peritonitis be the chief factor,[1] then the procedure of Mikulicz will be welcome indeed.

As a rule two stage operations should be avoided. But they are to be rigidly adopted in presence of *an existing obstruction*, every trace of which, as is evident from our mishaps, must be got rid of before one thinks of attempting union. So also in weak patients or when the primary resection taxes the resources of the patient too greatly. In such cases we have left a more or less open wound and employed the iodoform tampon, a method of treatment also required when there is any doubt as to the vascularity of the bowel or when there has been much stripping of the peritoneum. The secondary operation is however always more difficult than the primary. The presence of an artificial anus is a constant danger, and together with the adhesions render the whole operation anxious and arduous.

[1] "Handbuch der Deutschen Chirurgie," p. 465.

H.—*Carcinoma of the Sigmoid Flexure.*
Artificial Anus. Incomplete Op

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March.	
Artificial Anus—Incomplete Operation.	
tion, Colostomy, July 30.	Died Aug. 14, 1901.

F THE SPERMATIC CORD WITH AN ACCOUNT OF THREE CASES

By J. W. DOWDEN, F.R.C.S.Ed.,
t Surgeon Royal Hospital for Sick Children, Edinburgh

is no doubt that this interesting condition occurs with r frequency than is generally supposed, but the symptoms h result from slight degrees of torsion resemble so closely se produced by inflammation of the testicle that a faulty gnosis is apt to be made, and even where the pronounced haracter of the torsion has produced symptoms of severity, the

diagnosis in many of the cases has been that of strangulated hernia, the operation revealing the true condition.

In order to serve as a text for future remarks the records of three cases are as follows :—

CASE I. J. D., aged 14 months, came to the out-patient department of the Edinburgh Royal Hospital for Sick Children on April 14th, 1900.

There was nothing of note in either the family or personal history.

On April 9th, that is five days before admission, the child after being fed vomited, he was cross and remained so all night. The next day it was noticed that sitting up caused him pain and made him cry, an unusual thing for him. He was constipated all that day, 10th of April, and the next day, April 11th; a dose of opening medicine operated however on the 12th April. There was no continuation of the vomiting. The left thigh was noticed to be kept in the flexed position and the child continued to be restless and ill. On April 13th there was seen in the left groin a swelling very tender and firm, which the mother states has not altered in size since her attention was drawn to it. Nothing abnormal had been noticed about the child previously.

On inspection the child was obviously ill, the left thigh being kept flexed. In the region of the left external abdominal ring there was a rounded swelling about the size of a pigeon's egg, the skin over it being healthy in appearance. On palpation of this swelling it was found to be firm, tense and indistinctly lobulated, and acute pain was obviously caused even on slight manipulation. The left testicle was absent from the scrotum. The temperature was 100·6° F.

The diagnosis made was inflammation of an undescended testicle, or undescended testicle with strangulation of a portion of the intestinal lumen.

The diagnosis being one of doubt the treatment was an exploratory operation which in the absence of Mr Stiles was carried out at once. A tense fluctuating swelling was exposed at the external abdominal ring containing apparently dark coloured fluid. On incising it about two drachms of dark blood-stained fluid escaped, and lying in the emptied sac was

the testicle, dark purplish black in colour. The size of the testicle was not increased, but above it there was a marked nodulated swelling over an inch long and nearly that in diameter, dark purplish black in colour also. This swelling and the testicle lay free in the sac. The nodulations seen on the swelling above the testicle seemed due to the presence of constricting bands, but on closer examination proved to be due to a twisted condition of the cord, and three half turns from right to left sufficed to undo the torsion.

The cord was pulled down and ligatured as high up as possible, but even then the vessels on cutting across them proved to be thrombosed. The subsequent history was uneventful except—in spite of rigid aseptic precautions—a few drops of pus which were so slight as apparently not to interfere with the rapid healing of the wound.

Examination of the specimen.—The testicle was dark purple in colour, and on section the interior resembled it; this was obviously due to engorgement with blood. The thickened nodulated structure proved to be the greatly congested and swollen epididymis with the cord, the intersections being due to the twisted condition. The veins were all markedly distended and thrombosed.

CASE II. R. M., aged 5 months. Good family history, and personally had been a healthy child, but occasionally tended to be sick after his food.

History of Condition.—On the evening of July 26th, 1900, the boy was restless, but did not seem in pain. Next morning, July 27th, the mother noticed a small lump above the left thigh, evidently painful. He cried much, and kept his thigh in the flexed position. There was vomiting, but not to an unusual extent with him. On July 28th the swelling had increased in size, and the skin over it was slightly red. Handling caused intense pain. All the symptoms were more marked on July 29th. The bowels acted every day, and nothing unusual was noticed about the stools. The child was brought to the Edinburgh Sick Children's Hospital on July 30th, and the condition on admission was as follows:—

In the left inguinal region there was a swelling about the

size of a pigeon's egg. The skin over it was slightly red; the thigh was kept flexed on the left side.

On palpation the left testicle was found to be absent from the scrotum. The swelling in the region of the external abdominal ring is firm, tense, elastic, and extremely painful. Temperature, 100° F.

Diagnosis.—Torsion of the spermatic cord in an ectopic testicle.

The operation was performed the next day. A rounded fluctuating swelling was exposed, with apparently dark coloured fluid within. On incision about two drachms of dark blood-stained fluid escaped. The testicle lay loose in the sac. Dark purplish black in colour, it was not obviously enlarged. Above the testicle was a dark purplish mass nearly twice the size of the testicle, intersected, as it were, by tight bands spirally arranged from above downwards, which proved to be due to a twisted condition of the cord from left to right, and could be untwisted by three half turns the other way. The veins were all markedly distended and thrombosed. The upper end of the cord could be pulled down from the internal ring where it appeared normal. A ligature was applied and the mass removed.

The after history was uneventful. Examination of the specimen showed the whole mass to be infiltrated with blood-clot. The appearance of the testicle on section was like tar in its shiny blackness. The swollen structure above the testicle proved to be epididymis and cord greatly infiltrated with blood, and on section resembled the testicle in character.

CASE III. S. S., aged 31, a shepherd, was admitted to the wards of the Edinburgh Royal Infirmary under the care of Professor Annandale. The complaint was that of a swelling on the left side of the scrotum in the upper part.

The history of the case was as follows:—The left testicle had never hung as low as the right testicle, but appeared otherwise similar in character to it. About the middle of November 1900, while running after sheep, a lump gathered at the upper part of the left side of the scrotum, due to the testicle which "went up." There was practically but little discomfort. The testicle remained in this position and pro-

PLATE IV.—TO ILLUSTRATE DR J. W. DOWDEN'S PAPER.

duced no unpleasant results till about the middle of December, when he awoke one morning with sudden severe pain in the region of the left testicle. The pain extended into the abdomen, especially across the lower part, and was sickening in character. Vomiting soon ensued, and his general condition was one apparently of collapse. On examining the region he found a swelling as big as an orange, very tender to touch, and he also found that straightening the leg out caused pain in it. The treatment he adopted was gentle rubbing of the swelling, when it began to disappear, and in five hours all trace of the symptoms and tumour had disappeared.

On January 1st, 1901, he had a similar attack, awakening him from sleep, and under the same treatment it disappeared, but a fortnight later he noticed the testicle had become smaller in size.

He was admitted to the Infirmary on January 17th, and the condition found was incomplete descent of the left testicle, which was smaller than the right. There was no hernia.

At the operation, which Professor Annandale performed, the left testicle was found somewhat atrophied, hanging quite free in a sac which extended from the internal abdominal ring well down in the scrotum. The sac and testicle were removed.

On examination of the specimen the testicle was hanging quite free in a large tunica vaginalis. The attachment at the upper part of the sac was broad, and near the testicle this suspending structure divided into two; the posterior and larger consisting of veins was fixed to the upper end of the epididymis; the anterior contained the vas deferens, which on dissection revealed a kink or angling from left to right, which was fixed in position by old adhesions.

The testicle was small, and consisted chiefly of fibrous tissue, as also did the epididymis.

The *causes* of this condition cannot be definitely stated as yet; certainly the main predisposing one is an abnormality in the relations of the tunica vaginalis to the testis, epididymis and cord whereby these structures are completely enveloped by the visceral layer, and consequently hang down free in the sac formed by the parietal; in other words, the arrangement may be called one of "floating testicle."

Nicoladoni (1), who was the first to draw attention to

Carcinoma of the sigmoid readily gives rise to obstruction, and this may occur suddenly without any marked antecedent symptoms. In such cases the sensitive distended cæcum may simulate the site of stricture. Should the rectum only contain a small enema the correct diagnosis may be reached, even when distension prevents palpation. The value of a rectal examination must be insisted upon in every case. The more closely the stricture approaches the ileum the less likelihood is there of obstruction, for the fluid and gaseous contents of the small intestine may freely pass through the narrow channels as in the preparation Fig. 2 Pl. III.

The prognosis seems to be good in cases where there has been early diagnosis and interference. The long periods for which the disease may remain strictly local is remarkable. The neoplasm tends to run at right angles to the axis of the canal, and not parallel to it as is frequently seen in the œsophagus and stomach. Secondary affections are most common in the liver. If the patient escape recurrence for twelve months the outlook is hopeful. The operative results then may be regarded as distinctly encouraging and are capable of greater improvement. Early exploration in cases of doubtful diagnosis is demanded. The dangers of an attack of obstruction cannot be exaggerated in view of the cardiac failure so often seen following auto-intoxication.

It remains to thank the various friends who have recognised the value of early surgical intervention, and Mr Miles, Dr Johnston, Dr Jeffrey and the House Surgeons for their valuable aid at many a tedious case.

TABLE OF CASES.

A.—*Ileo-Cæcal Carcinoma—Resection—Primary Suture.*

No.	Sex.	Age.	Date.	Site.	Result.	Present State.
1.	Miss K.	47	1893.	Ileo-cæcal.	Healed.	Well.
2.	Mrs P.	40	Feb. '97.	Asc. Colon.	Healed.	Died Mar. '98.
3.	Mr M.	67	Nov. '96.	Asc. Colon.	Healed.	Died Jan. '97.
4.	Mr C.	28	Aug. '96.	Appendix.	Healed.	Well.
5.	Mrs M.	40	Ap. 23, 1901.	Asc. Colon.	Died Apr. 25.	
6.	Mr A.	32	April 1901.	Ileo-cæcal.	Healed.	Well.

B.—*Resection—Artificial Anus—Incomplete Operation.*

7.	Mrs C.	59	Dec. 1901.	Asc. Colon, &c.	Died.	

C.—*Lateral Anastomosis—Ileum to Ascending Colon.*

No.	Sex.	Age.	Date.	Site.	Result.	Present State.
8.	Mr F.	35	May 1901.	Ileo-cæcal.	Healed.	Well.

D.—*Ileo-Cæcal Stricture, Non-malignant—Resection—Primary Suture.*

9.	Boy S.	9	1899.		Healed.	Well.

E.—*Resection—Secondary Suture.*

10.	Nellie S.	7	Resection, 1st June. Suture, 5th June '95.		Healed.	Well.

F.—*Carcinoma of Sigmoid Flexure—Resection—Primary Suture.*

11.	Mr G. S.	36	1896.		Healed.	Died Feb. '97.
12.	Mrs M'K.	58	6th Sept. 1896.		Died 5th Oct.	
13.	Mr S.	38	June 1900.		Healed.	Well.

G.—*Resection—Secondary Suture.*

14.	Mr D.	60	Colostomy, Mar. '95. Resection and Suture, April.		Healed.	Died 1896.
15.	Mrs T.	65	Colostomy, Mar. '95. Resection and Suture.		Died.	
16.	Mrs J.	47	Colostomy, 5th Sept. 1900. Resection and Suture, 8th Sept.		Died., 10th Sept.	
17.	Miss B.	39	Resection and Colostomy, 3rd Oct. 1900. Suture, 15th Oct.		Healed.	Well.
18.	Mr J.	55	Colostomy, Dec. 1898. Resection and Suture, Feb. 1901.		Healed.	Well.
19.	Mr B.	56	Resection, Colostomy, Jan. 30, 1901. Union, March.		Fæcal Fistula.	Died April.

H.—*Resection—Artificial Anus—Incomplete Operation.*

20.	Miss B.	35	Resection, Colostomy, July 30.		Died Aug. 14, 1901.	

TORSION OF THE SPERMATIC CORD WITH AN ACCOUNT OF THREE CASES

By J. W. DOWDEN, F.R.C.S.Ed.,
Assistant Surgeon Royal Hospital for Sick Children, Edinburgh

THERE is no doubt that this interesting condition occurs with greater frequency than is generally supposed, but the symptoms which result from slight degrees of torsion resemble so closely those produced by inflammation of the testicle that a faulty diagnosis is apt to be made, and even where the pronounced character of the torsion has produced symptoms of severity, the

Keen (15) found pyogenic organisms in the fluid around the testicle, and this fact must be borne in mind as a true septic thrombosis of the veins may have taken place. The ultimate result of such excessive hæmorrhagic infiltration of the testicle and epididymis can only be the destruction of the organ and the formation of fibrous tissue unless pyogenic organisms be present, when necrosis and suppuration will result. In any case, as has been shown by Nash (45), slight attacks, even of torsion, are liable to induce atrophy of the testicle.

Symptoms.

Perry (36) classifies torsion of the cord into two varieties. Firstly, where there is a sudden and acute attack; and secondly, where there are recurrences with or without the eventual onset of an acute degree of torsion.

In young children, the symptoms, as narrated by the mother, follow closely those given in cases I. and II.; that is, in brief, the sudden onset of fretfulness, vomiting and constipation, the last not complete, but reacting to laxatives. Flexion of the thigh on the affected side and the presence of a swelling which is noticed to be excessively tender on handling. When the child is examined he is seen to be obviously ill as a rule, with a flexed condition of the thigh on the affected side. The swelling may be situated in the region of the inguinal canal, at the external ring or in the scrotum, it is rounded in shape and varies in size, in the young child from about a pigeon's egg, in the adult it may reach the size of a small cocoa-nut.

The skin over the swelling may be reddened and the abdomen is often distended. The temperature is usually raised.

On palpation the abdominal walls are usually hard; there may be œdema about the swelling, which is tense, elastic and very tender, while an indistinct sense of lobulation can possibly be made out. The testicle is either absent from the scrotum or the swelling obscures it. No impulse on crying or coughing is communicated to the swelling.

Boys about puberty, and those older, state their own case, which is, as a rule, the sudden onset of severe pain in the affected testicle, accompanied by pain in the lower part of the abdomen, and sometimes radiating towards the umbilicus.

Vomiting is nearly always present, and in Whipple's case, reported by Nash (5), it became stercoraceous in character. Constipation is usually present though not complete. The general symptoms of collapse are usually present.

Locally there is marked swelling with possibly redness and œdema and always pain. The swelling is elastic, very tender, dull on percussion with no impulse on coughing. Flexion of the thigh is usually present on the affected side.

These are briefly the symptoms in those cases which may be considered acute severe attacks.

The cases where there have been several attacks, the recurrent cases, give a history of sudden acute onset, but by stroking the parts or other treatment, the condition disappears to return at some later date and perhaps culminate in an attack which does not resolve as the others have done. Van der Poel (27) and Perry (36) have both described interesting cases of this variety, and here and there several cases can be found recorded under headings such as Recurrent Attacks of Inflammation in an ectopic testicle.

Diagnosis.

The diagnosis of this condition may be comparatively easy; on the other hand from the severity of the symptoms it may be a matter of such difficulty that an exploratory operation alone can reveal the true state.

The chief point to pay attention to is the mode of onset. In torsion of the cord this is as a rule sudden and marked, with severe local pain and swelling which rapidly follows, while the general symptoms are almost invariably those of collapse. The two chief conditions for which torsion has been mistaken are firstly strangulated hernia, and secondly orchitis.

The diagnosis from strangulated hernia may be exceedingly difficult when a condition of hernia is known to exist together with an ectopic testicle, and it may be impossible to make a diagnosis between the two when only a portion of the intestinal lumen (Richter's hernia) is involved.

There is one point here to bear in mind and also with regard to the diagnosis from hernia generally, and that is in hernia there is swelling with pain coming on at once or very soon; in torsion there is pain followed by swelling.

When torsion occurs in a descended testicle the ring is usually clear and the bowels react to medicine, while the vomiting if the condition has lasted any time tends to disappear; rarely does it become stercoraceous.

In young children the diagnosis in the first twenty-four hours is one of much difficulty. The facts on which stress is to be laid, are that in torsion the testicle cannot be discovered; there may also be no previous signs of hernia; in any case the diagnosis will be verified by an operation, which should be performed then and there. The diagnosis is easier in cases that have not been seen for three or more days after the onset of symptoms, because in torsion there is then the tendency for the vomiting to become less or cease, the bowels to move and the collapsed condition to disappear. Recurrent cases are diagnosed by the previous history of the attacks, their sudden appearance, location and rapid disappearance, with possibly the history of the testicle becoming smaller after these attacks. Many cases of torsion have been diagnosed as acute orchitis and the subsequent atrophy of the testicle attributed to that cause.

Hutchinson, senior (47) has described under the heading of "Acute Atrophy of the Testicle" the typical symptoms of torsion, and states, "The forms of acute inflammation of the testicle which lead to atrophy are, I believe, in some sense neurotic in origin."

It is also taught in the majority of the text-books that undescended testicles are especially liable to inflammation, a statement which is without any scientific foundation; no doubt they are liable to injury, and that by itself may predispose but not produce an inflammation—meaning by inflammation a true microbic process.

The grounds apparently on which the diagnosis of inflammation has been based heretofore are briefly the symptoms of swelling, pain, possibly redness and œdema, fever, and the general condition of vomiting, constipation and malaise.

All the signs then of inflammation, but these are also the signs of torsion of the spermatic cord. What, then, is the difference? The difference lies in the mode of onset. In torsion the onset is markedly sudden and severe, with as a general rule no obvious cause to produce it—comparing the

condition with inflammation. In the case of true inflammation the onset will be much more gradual and there will be as well a probable cause found in the genito-urinary tract or in some general condition, for example mumps. True acute orchitis in children and young lads is of such rarity that when symptoms as have been described arise, the diagnosis may be made of torsion of the cord, not inflammation.

From puberty onwards there is, of course, the greater possibility of an epididymo-orchitis occurring due to gonorrhœa or spread of other infection from the genito-urinary tract, but here again the onset of symptoms is slow in comparison with the typical sudden onset seen in cases of torsion.

The other conditions which may be mistaken for torsion of the cord are bruise of the testicle, sudden protrusion through the internal ring of a retained testicle. Septic blocking of the capillaries of the spermatic artery may spread to the pampiniform plexus and a true sloughing gangrene of the testis result.

Suppuration in a hydrocele of the cord or of tunica vaginalis. Ruptured varicocele. Bruise of irreducible omental hernia. Adenitis of the horizontal chain of lymphatic glands in the groin. All these may, as a rule, be easily distinguished from torsion by the sudden manner of onset and the severity of symptoms seen in the last condition.

Treatment.

If the case be seen in the first few hours after the onset of symptoms the cord should be untwisted as Gifford Nash (6) and others have so successfully done; this is comparatively easy when the testicle has descended, but probably very difficult when undescended. The untwisting should be carried out at first in a direction from within outwards, and if this produce increased pain the opposite direction should be tried.

As regards the after-treatment of these relieved cases, the probability is that in cases where a descended testicle is affected an operation should be performed to fix the organ firmly in the scrotum. With this object I would suggest as a method to be carried out, one where a broad strip of visceral tunica vaginalis be removed from the upper attachment of the cord to the lowest point of the testicle and a corresponding portion of the parietal layer also removed, then the cut edges of the visceral

and parietal layer are sewn together with catgut. Adhesions would form between the raw surfaces on the testicle and inner side of the scrotum, while the stitched edges of the visceral and parietal layers of the tunica vaginalis would hold the organ in position.

In cases where the testicle is undescended, after an acute attack has been early relieved by untwisting, the operation to be performed would be one of either bringing the testicle down into the scrotum, provided the vas deferens is of the looped variety and sufficiently long to allow of this procedure, or what will much more probably be the case, removal of the organ.

Cases where the testicle has been affected for twelve or more hours, or where there have been several attacks with atrophy resulting, the safest procedure is removal of the testicle, taking care in acute cases to make the section of the cord above the thrombosed area lest it so happen that septic injection of the capillaries spreading to the veins has been a factor in the condition.

In conclusion I wish to express my thanks to Mr Gifford Nash of Bedford for his kindness and help, to Professor Annandale, and also to Drs Paul and Shepherd.

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Carnegie Trust.

WE publish this month two articles by prominent reformers, and a further reference to Mr Carnegie's gift will be found in Professor Wylie's Graduation Address.

In addition to longer articles, we would be glad to insert short communications on the same subject, so that all sides of the matter may be considered.

Special Articles

MR CARNEGIE'S GIFT

How may a Revenue of Several Thousands per Annum be best applied for the Furtherance of Medical Teaching and Research in Scotland?

A QUESTION of such wide and far-reaching import as the foregoing will very obviously receive the most divergent answers from different people. The writer proposes to answer the question by the one word "Consolidation."

As this discussion is the direct outcome of the Carnegie bequest, there must of necessity be frequent reference made to that bequest, and to its munificent donor, Mr Carnegie. At the very outset then, it may be almost certainly assumed, that when the germs of his generous ideas first entered his thoughts Mr Carnegie was unaware of the somewhat peculiar state of affairs existing in medical circles in two out of the four University towns of Scotland. We refer of course to the Intra- and Extra-mural competition to be found in Edinburgh and Glasgow. This lack of knowledge on the donor's part has been assumed, simply because in the first fleeting reports which the Scottish press gave of Mr Carnegie's wonderful scheme to a wondering public, no mention was made of these Schools, whereas they were included, partially at all events, in the official publication made some weeks later, and after Mr Carnegie's attention had been prominently drawn to their existence by the Schools themselves. As a result of this it may perhaps be still further assumed that even in the official publication, made some few weeks after the vague and alarming rumours referred to, sufficient attention had not been paid to the possible consequences of the Carnegie donation on such Extra-mural Schools. Be this assumption correct or not, this much at least is certain, that Mr Carnegie's sole object in the bestowal of his millions has been, and is, the benefiting of medical and scientific education in Scotland. He has had no desire to build up the one Corporation upon the ashes of another, nor the fostering of the one class to the exclusion of the other. In thus interpreting Mr Carnegie's wishes we feel sure that we are merely voicing his own sentiments.

Proceeding therefore on solid ground, our attention may be more especially directed to the peculiar relationships already existing in Edinburgh and Glasgow between the Universities and the Extra-mural Schools and the probable effects of the Carnegie donation on these relationships. In both places there

is the apparently paradoxical situation of an Extra-mural School, teaching not only on its own account, but also for, and against its own University. So far as we are aware, this, at first sight, extraordinary state of affairs is not to be found in any other medical centre in Great Britain.

In dealing therefore with this aspect of the question its discussion may possibly be facilitated by looking at it from three different standpoints.

1. The benefits which have already accrued to medical teaching and research in Scotland by the existence of Extra-mural Schools in Edinburgh and Glasgow.

2. The possible effects of the Carnegie donation on these Extra-mural Schools.

3. The furtherance of medical education and research in Scotland by the consolidation of such Extra-mural Schools with the Universities, by means of a proper application of the Carnegie bequest, or, if possible, by an extension of it.

1. *The benefits which have already accrued to medical education and research in Scotland by the existence of Extra-mural Schools in Edinburgh and Glasgow.*—Considering that the very existence of Scottish medical education in the first place, and the institution of the University of Edinburgh in the second place, are both entirely due to the ancient Surgeon-Barbers of 1505, it would require a bold individual to deny in this, the twentieth century, the beneficial effects that the Extra-mural Schools have exercised on medical education in Scotland. Had the Extra-mural School in Edinburgh done nothing more beyond founding the University of Edinburgh, it would have established the strongest claims to the generosity of a philanthropist of the Carnegie type. But even to-day, notwithstanding its four centuries of age, it continues in the full plenitude of its powers, and, amongst other things, undertakes about one-third of the total education of the University students themselves. It altogether plays such a large and prominent part in the educational well-being of cosmopolitan Edinburgh that its extinction would be nothing short of a national calamity. It is quite unnecessary to emphasise the question farther. The substantial benefits which have accrued to medical education in the past from these Schools have already been pointed out to Mr Carnegie, as was duly recorded in the previous number of *The Scottish Medical and Surgical Journal.*

2. *The possible effects of the Carnegie donation on these Extra-mural Schools.*—It has not yet become the custom in civilised countries for a child, on reaching maturity, to deliberately assassinate its parents. Yet this seems likely to happen in the case of the University and her venerable parent, the Extra-

mural School. For the most obvious effect of the Carnegie bequest will most certainly be the complete or partial ruination of the Extra-mural Schools in Edinburgh and Glasgow.

It is a well-known fact that the Extra-mural Schools of Edinburgh and Glasgow, in addition to teaching for, and against their respective Universities, also combine to grant a joint qualification, universally known as the "Triple Qualification." In Edinburgh alone about as many Licentiates qualify annually as Graduates from the University. Both Licentiates and Graduates are drawn from all parts of Greater Britain, but the former are probably attracted to the Schools granting this qualification partly by its cheapness, and partly by the fact that the necessary examinations are held more frequently than are those within the University.

The Carnegie Trust, by offering to pay the fees of all students of Scottish extraction, removes at one sweep all Scottish born students and the majority of the Colonial students from the jurisdiction of the Extra-mural Schools. For it is obvious that if a Scottish born student, or a Colonial student, the majority of whom are of Scottish extraction, were previously attracted to the Extra-mural Schools by their cheapness, this attraction ceases directly his fees are paid for him within the University. No mention is made of the payment of the fees of a student of Scottish extraction who may wish to take the "Triple Qualification," and from this unfortunate oversight will result grievous calamities, unless indeed something is done to remedy the error.

The resulting financial loss to the Colleges and Lecturers connected with the Extra-mural Schools from this alone will be about 45 per cent., as shown by recent statistics. Only last summer a census of the nationalities of the students attending the Extra-mural classes in Edinburgh was taken, with the result that some 57 per cent. were found to be either Scottish, Colonial, or Foreign. Deducting say 12 per cent. for Foreign and Colonial students not of Scottish extraction, there remains the 45 per cent. which represents the nett loss to the Extra-mural Schools as the result of the Carnegie bequest. It may be readily enough admitted that the census referred to was taken for another purpose, but the facts remain.

A reduction of 45 per cent. in the income of the three great institutions connected with the Extra-mural Schools, viz., the Royal College of Surgeons of Edinburgh, the Royal College of Physicians of Edinburgh, and the Faculty of Physicians and Surgeons of Glasgow, will go a long way to involving these bodies in financial ruin. It is of course well known that these institutions have other sources of revenue besides examination

fees, but their income from such sources is not sufficiently elastic to permit of their weathering with safety the financial storm which is in store for them.

Upon the Extra-mural teachers the loss of 45 per cent. in students' fees is even more irreparable. Those teachers who have only Triple Qualification students to draw upon will be either reduced to a starvation stipend or forced to adopt some other method of earning a livelihood. Those who, by the excellence of their teaching, or other cause, can still succeed in drawing away from the Universities a sufficient number of students will probably be enabled to carry on, but at a greatly reduced income, for students will inevitably fall into the error of supposing that because they are Carnegie students they must of necessity study within the University portals.

The nett result, therefore, of the subsidation of the University degrees to the exclusion of the Triple Qualification is:—

1. The partial paresis of the three Colleges, and the financial ruin, either partial or complete, of their Lecturers.
2. The extinction of the Triple Qualification.
3. The disappearance of the Extra-mural Schools.

Whatever views may be held as to the extinction of the Triple Qualification, and doubtless there are many who would regard its loss with feelings of equanimity, there cannot be the same doubt as to the grave results dependent on the disappearance of the Extra-mural Schools. As previously stated, their extinction, or even their partial paralysis, would be nothing less than a national calamity. Such a loss would be the most deadly blow which could possibly be dealt at all that Mr Carnegie most desires to benefit—University education and the progress of Medical Science in Scotland.

It seems almost certain, then, that notwithstanding that the framers of the Carnegie Trust-deed hurriedly included the Extra-mural Schools in the terms of the deed, they could not possibly have foreseen the grave consequences which still await these Schools as the result of that gift. Something more requires to be done in order to save the three Colleges and the Extra-mural Schools. The Triple Qualification may, perhaps, be allowed to take its chance; but of the wisdom of preserving the first two there can be no room for doubt. What that something is we shall now endeavour to show.

3. *The furtherance of Medical Education and Research in Scotland by the consolidation of the Extra-mural Schools with the Universities by means of a proper application of the Carnegie bequest, or, if possible, by an extension of it.*

Within the last ten years two facts have been only too

evident to those who have closely watched the progress of the Scottish Universities.

1. That in all the Scottish Universities in general, and in Edinburgh University in particular, there has been a marked diminution in the number of students coming up.

2. That in those University towns where Extra-mural teaching can be obtained, such teaching has been taken advantage of by the University students themselves to a hitherto unprecedented extent.

Various explanations have been put forward to explain the first fact, but all more or less erroneous. The second fact the University authorities have not attempted to explain.

The reason, however, for both facts is not far to seek. It is simply due to the overcrowding and the undermanning of the University classes. The most generally believed of the erroneous explanations given is that it is due to the introduction of the five years system. Unfortunately, however, for this theory, the diminution set in before the introduction of that system, and has continued steadily ever since. The correct explanation is the one given. The question that naturally arises out of this explanation is, "Why, then, do not the Scottish Universities increase their staff, or, at all events, institute a floating teaching staff, to cope with the ebb and flow of studentdom?" The question is as easily answered as asked. Want of funds.

We are now in a position to deduce, from what has been pointed out, two most important truths.

1. The Universities of Scotland are insufficiently manned, and are unable to cope with their educational liabilities. As a necessary result these Universities are unable to retain within their portals the students whom the fame of the Professoriate has attracted.

2. At the very doors of two, at least, of these undermanned Universities there are some of the ablest men and finest teachers in the country—men who by their own abilities are removing in honourable competition thousands of pounds annually from the University exchequer. In almost every department of Medicine — be it Medicine, Surgery, Gynæcology, or the ancillary sciences—are to be found men of European reputation literally working for their lives against their own poorly equipped and undermanned University, as the latter knows to its own financial cost.

The Carnegie Scheme threatens to still further overcrowd the already overcrowded Universities, and to ruin the opposition. Given a similar occurrence in business circles, amalgamation would undoubtedly be the policy of the shrewd man of the world, the policy of such a man as Mr Carnegie.

The questions then naturally arise—Would amalgamation between the Universities and the Extra-mural Schools solve the various difficulties threatened by the present Carnegie bequest? Is such amalgamation feasible? Would amalgamation benefit medical education and research, which it is understood is what Mr Carnegie most desires to improve? What, if any, are the difficulties in the way of amalgamation?

To the first of these questions—Would amalgamation between the Universities and the Extra-mural Schools solve the various difficulties threatened by the present Carnegie scheme?—we answer emphatically, Yes. Let us take the case of Edinburgh, for example. Amalgamation to-morrow would in almost every instance treble the teaching staff. The student would even have in some subjects the choice of half a dozen teachers. Amalgamation would give him this choice throughout his entire curriculum, instead of only in half as at present. With amalgamation this choice could be exercised without the loss of a penny to the University; at present, without amalgamation, it costs the Universities thousands of pounds per annum. The evils of overcrowding disappear at once, the task of teaching is lightened all round, and the teaching itself is improved, or at all events is not deteriorated, for the teaching competition would be sensibly increased, as will be presently shown. The extra-mural teachers are not ruined, but are actually utilised to enhance the power and glory of the Scottish Universities; therefore amalgamation removes all the objections to the present Carnegie Scheme, and very materially assists the wishes of its founder. Without amalgamation the present Carnegie gift is at best only a partial success, or, what is much more probable, a partial failure.

The second question—Is such amalgamation feasible?—is, let it be frankly admitted, a more difficult one to answer. We believe it is feasible, given the necessary funds. Without such funds we should say it was impossible. Given the money, amalgamation is perfectly easy of accomplishment on some such plan as the following. Such a scheme would affect the present Extra-mural Lecturers, the Universities, and the Royal Colleges. Let us therefore deal with each one of these bodies *seriatim* as they would be influenced by the proposed scheme.

1. *The Extra-mural Lecturers.*

The *present* Extra-mural Lecturers *shall have the option* of becoming an integral part of the University with the title of Professor, Extra-ordinary Professor, Privat-docent, or Lecturer, as the authorities may decide. The term "Lecturer" would perhaps

best suit the exigencies of the case, as it would in no way disturb the present state of affairs.

Such Lecturer is to be termed "Lecturer in the University of So-and-so." He shall be paid a fixed salary of from £400 to £700 per annum, according as to whether he is engaged in private practice or not. These proposed salaries are one-half what the Scottish Universities Commission decided should be the fixed remuneration for a Scottish Professor and are based upon the same principle.

All fees payable by a University student to such a Lecturer are to be paid into the University fee fund. Fees payable by a triple qualification student are to be paid to the Lecturer for his own private emolument as at present.

Every Lecturer is to examine without payment for both his College and the University, if called upon to do so.

Every incorporated Lecturer shall be a Fellow of one or other College, and a graduate of the University.

Every incorporated Lecturer shall receive a capitation grant of £1 per head for every University student attending his class.

The incorporated Lecturers shall be under the jurisdiction of the University to which they are affiliated.

2. *The Universities.*

The Universities shall pay the working expenses of their incorporated Lecturers, and shall have the right of appointing the Assistants to such Lecturers.

There shall be a capitation grant of £1, 10s. per head for every student attending a University Professor's class.

The University shall have the right, in conjunction with the Royal Colleges, of appointing the incorporated Lecturers.

Lectureships already existing within the Universities shall be paid at the same rates as those now proposed for the incorporated Lecturers.

The Universities shall have the option of purchasing the teaching plant of their incorporated Lecturers at a fair valuation.

The Universities have full control over their incorporated Lecturers, and shall be under the jurisdiction of the University.

3. *The Royal Colleges.*

All associated Lecturers shall be Members or Fellows of one or other College.

The Royal Colleges shall share with the Universities the right of appointing the incorporated Lecturers, under the same conditions as now exist.

Every incorporated Lecturer shall teach if required, for the triple qualification on the same conditions as at present.

Every incorporated Lecturer shall examine without payment for his College if called upon to do so.

Such are briefly the outlines of a perfectly feasible scheme for the amalgamation of the Extra-mural Schools with the Universities. What are its advantages?

The first and most obvious advantage is that such a scheme, provided the money were forthcoming, could take effect to-morrow without the alteration of a single existing feature.

Secondly, overcrowding of classes is abolished, or reduced to a minimum.

Thirdly, the teaching staff of the Universities is trebled and quadrupled by the addition of the ablest teachers in the kingdom. This is not said in any vainglorious spirit, but simply for the reason that such teachers at present depend for their very existence upon their teaching capabilities. Were these not of the best, the teachers would not now be in existence.

Fourthly, the proposed capitation grant provides the requisite stimulus for good teaching. The teaching competition does not disappear, but simply becomes Intra-mural, instead of Intra-mural *versus* Extra-mural.

Fifthly, both Universities and Colleges are provided with an increased number of Examiners without any further payment whatsoever. In the case of the Colleges they actually save money.

Sixthly, there is absolutely no interference with the Triple Qualification regulations, or with the Teachers as they now exist.

Seventhly, this scheme not only avoids the ruin threatened by the present Carnegie Scheme, but actually and very materially assists that gift to a much greater degree of utility.

Eighthly, not a single person is inconvenienced by the proposed scheme, as it is a voluntary one for the existing Extra-mural Lecturers, and compulsory only for those in days to come.

Lastly, for the Universities themselves, there is nothing but what is beneficial. They increase their staff by the addition of their most formidable rivals. They retain all their students, their fee fund is materially increased, their examiners are increased in number free of cost, their powers of attracting students from all parts of Great and Greater Britain are materially increased, and their teaching work is not only improved, but is materially lightened by being shared by others.

Surely, then, consolidation is the best answer to the question, "*How can a revenue of several thousands per annum be best*

applied for the furtherance of Medical Teaching and Research in Scotland?"

Lastly comes the crucial point—What, if any, are the difficulties in the way of amalgamation? The solution, alas! is easy. Lack of money. Ever the root of evil! But here it is not so. It is its absence which is the only evil in this case. Given the money, and we doubt if there is a single person who is not convinced that amalgamation is the only solution of what is otherwise an insuperable difficulty. No amount of millions to the Universities will obviate the ruination of the Colleges without some form of suitably endowed amalgamation. It is as important for the Universities as for the Colleges. Apart they are crippled, together they are unrivalled.

What that endowment would require to be is not an easy problem, but probably another £50,000 per annum would not only endow the existing Lectureships, but would provide them in those Universities wherein they do not already exist. Such an endowment would very materially enrich the Universities indirectly, for it would be the means of bringing into their coffers all the monies which they now lose to their Extra-mural friends and foes.

A fair criticism of the present proposal is then, we think, a comparison of it to the most magnificent arch ever erected —but minus the keystone. That keystone is amalgamation with its suitable endowment.

Is it too much to hope that Mr Carnegie will inquire into this matter, and if he finds the diagnosis correct, supply the treatment? For then, and then only, will Scotland occupy that position among the educational countries of the universe which Mr Carnegie himself already occupies amongst philanthropists.

RICHARD J. A. BERRY.

DIFFICULTIES IN THE WAY

LUXURY and Laziness are two factors in University life which the Carnegie Trust, might unwittingly foster, which a masterly use of the endowment might exorcise. The time is not long past when the Edinburgh student found his abode in Arthur Street or Cumberland Street, and a Glasgow student defined "apartments" as 10s. a week and "lodgings" as "3s. 6d. a week and sleep with a stonemason." Let us admit that the general standard of comfort of the whole community has greatly improved. Let us further admit that efforts to introduce some sort of social life among students are laudable and even necessary. Yet in the hard matter of finance it cannot be denied

that the migration to Warrender Park, the enjoyment of the privileges of the Students' Union, and a more general participation in various phases of social life, have alarmingly increased the cost of maintaining a student, especially in the medical side. In the result, medicine is being more and more restricted to the children of the well-to-do. It will be a bad day for the Scottish Universities should the boast cease to be true, that through them the highest careers in knowledge are open alike to the peasant and the peer. Mr Carnegie's purpose may be fitly described as intended to bring about the full realisation of this boast.

The Scottish University system has been until now a rigid one of strict curricula, close attendance on systematic lectures, and more or less steady preparation for examinations. Combined with this has been our absolute freedom from personal supervision on the part of the University authorities. The constant class and examination work, the plainness of Scottish life, the virtual absence of luxury in his surroundings, tended to keep the Scottish student free from temptations. These sorely beset the student at the English Universities under the tutorial and monastically derived system, notwithstanding the minute regulation of many petty details of a young man's life by Vice-Chancellors, Proctors, and Bulldogs. From the tragedies which sadden English families we have hitherto been practically free. Under the German system a student flits about from University to University listening to the most brilliant teachers in the subjects which attract him, there being, except in medicine, no definite curriculum of study. He is free from the burden of intermediate examinations, and his general life is regulated by the students' societies who restrain as well as protect him. Need it be said that now there is in Germany a desire for a definite curriculum and more examinations, with the wish that the extravagance springing up from the rivalry among the students' societies may be curtailed. Nothing but the strong idealism inherent in the Teutonic mind would make the German system possible and bring students through to their degree.

We are now on the threshold of a new era. While in the Scottish Universities the curriculum theory is retained, the options now available in Arts and Science give great freedom. In Medicine, practical teaching is slowly gaining ground as against systematic lecturing, and a new unlimited field is opened up in medicine, arts and science, for post-graduate study and research. The last means longer residence at the University, hence the greater need for insisting generally on a simple inexpensive life for the sake of economy, and of the practical results to be got from plain living and high thinking.

So much for the taught. May we consider for a moment whether luxury and laziness are likely temptations to the teachers? Under the Scottish system lately ended by the Universities Commission, the Professors drew the endowments of their chairs and also the class fees. In this way, dependent largely upon the accident whether or no a chair was essential to graduation, there arose the greatest difference in their incomes, tending to break down social intercourse among the Professors. This is not alleviated by the circumstance that certain medical Professors, by consulting practice, greatly add to their resources, nor is the gulf much narrowed by the Commissioners having passed the class fees into a fund and fixed the individual salaries of chairs. Social distinction, resting on a pecuniary basis, affects still more strongly non-professorial members of the teaching staff. Were a German Professor transplanted into our midst, and after being allowed time to take root, asked what he missed most, one does not doubt his answer would be "intellectual stimulus." He would concede that in Germany the age of the ill-dressed, unkempt dreamer is over, and that his colleagues of to-day are well groomed and fashionably attired; yet he would assert that there is still strong the spirit of comradeship, of mutual interest in each other's work and ideas, and he might vividly recall the particular table in a well-known beer cellar of his favourite University town, where of an evening may be found assembled on an easy equality, professors, ordinary and extraordinary, and *privat docenten* discussing academic subjects.

Our difficulties are not made less in a city such as Edinburgh by the many social circles and other distractions which exist and tend to destroy a purely academic and intellectual life, diverting men's minds away from their teaching and their students, and leaving hardly a corner free for anything like research.

How are we to get the better of this luxury which begets intellectual and other laziness? Of the many remedies proposed, the writer ventures to prefer the old-fashioned one of *work*. But how is that to be applied? The answer is, through the powerful agency of the Carnegie Trust, beginning with the teachers and coming down to the taught. If Mr Carnegie's £100,000 a year can be so distributed as uniformly to create an incentive to work, work in the intellectual sense, the problem is solved not only for those who may be directly recipients of his endowment, but also for others. The impetus will be sufficient to set the whole academic machine in motion. It was perhaps unfortunate that the Universities Commissioners found it necessary to put the Professors on fixed salaries and to remove

entirely the very obvious incentive of payment by results through the class fees. That incentive is, however, not the only one available. The American method is to have several Professors in each subject, with one of them always following another on furlough in Europe working up new material, on which he is expected to write. The competition so produced is efficient and even severe. In Germany, besides the general intellectual stimulus to which allusion has been made, there is the correlation of extraordinary professor and of *privat docent* with the ordinary professor, providing both personal and pecuniary rivalry. The American system is too costly for us, unless perhaps a fifth Professor in some subjects could be added to the four Universities in common, so as to establish some sort of rotation. But the need for such a furlough is less in Scotland where we are much nearer the intellectual centres of the world. The German method lies more to our hand, and is indeed somewhat analogous to our extra-mural system in medicine, but would be insufficient without the general intellectual activity pervading the German Universities.

How shall this general intellectual activity be promoted, say in medicine, a degree-grinding faculty thinking, and perhaps compelled to think, of little but the exigencies of a curriculum for qualifying ordinary practitioners who have to be put through in large numbers? So it grew under the fee-earning system now extinct, but so it still remains. Superimpose upon that faculty what the Universities Commissioners have allowed for in their post-graduate scheme—a Department of Research. At first it could hardly be a big affair, and if certain notions of great investigators be followed, that brains and method are the essential things, it need not cost any terrible sum for buildings or apparatus. The director and his assistants would be expected to do independent work as well as to help those who were using the department. Vital to the scheme would be the institution of Research Fellowships to be held for one or two years, which could be competed for and should be of sufficient value to keep a man at the University. Some definite teaching duty might also be required from him. What seems to be wanted is an encouragement for the best students scientifically inclined, to remain about the University until at least their powers as investigators and teachers can be ascertained. For want of such encouragement too many good men are lost at once to the University and to science, passing straight into general practice. A Research Department so constituted would be the lump from which the whole faculty could be leavened. The other suggestion for conducting Research in small rooms off the

existing professorial laboratories does not seem to the writer as a layman to be efficient or even workable. The immediate purpose of the class laboratories is to afford practical instruction to ordinary students who are apt to complain that the teaching power and facilities are inadequate for their needs. There is great pressure on the staff, especially at particular times. How, therefore, could it be expected that the most delicate but less urgent work of research would receive just treatment in some side-room? Moreover, it is perhaps not safe to assume that the class laboratories are kept up-to-date for ordinary purposes. It would rather appear that during long tenure of office by Professors their laboratories tend to get out-of-date, otherwise the enormous expenditure on the advent of a new Professor is extravagant and an uncalled-for slur upon the illustrious dead. Another great difficulty with the class laboratory idea is the jealousy of investigators and their anxiety to feel independent. The more serene atmosphere of a special Research Department would be congenial in these respects. One must also take into account the case of a Professor wanting to conduct personal research. Whatever may be the justice of current complaints of professorial sterility, such could under the scheme indicated not long endure. The occupant of a chair would always be able to secure facilities for himself in the class laboratory, and the Research Department would be open to him as well.

When the spirit for work in the highest sense has once pervaded the Universities, difficulties which threaten about the apportionment of laboratory accommodation between Professor and Lecturer, the splitting of subjects, the institution of additional chairs, the erection of lectureships into professorships, ordinary or extraordinary, the independence of University assistants, and the status of extra-mural teachers, will be found to have disappeared.

In their place will have come a healthy rivalry throughout the whole teaching staff, then transformed into a community with high ideals, powerful and advancing in many departments of science, caring more for knowledge than for wealth or social position. Who dares to say what the intellectual output of such a body might not be?

It is not easy to speak plainly on this subject without being suspected of some personal direction. The writer desires to disclaim any intention of girding at individuals or at classes. On the contrary, he has tried to show that the difficulties are the results of the system in force, and can by changes in it be removed. Further, to attest the feeling of responsibility under which he has written, he appends his name.

DAVID D. BUCHAN.

THE BRITISH MEDICAL ASSOCIATION

Sixty-Ninth Annual Meeting, at Cheltenham

THE meeting at Cheltenham was in many respects one of special interest. It is a coincidence that the meeting should be held in the first year of the present reign, for the last time the Association met in Cheltenham was in the first year of the reign of Her late Majesty.

While many doubt the advisability of holding meetings in the smaller provincial towns, there was no doubt of the success of the Cheltenham meeting. The town is an interesting one, the surrounding country is beautiful, and the weather was all that could be desired. Indeed, the British Medical Association seems to share with the late Queen in the privilege of always having good weather for its meeting. Actually there has been not a drop of rain at any of the meetings since one memorable afternoon in Edinburgh three years ago.

The attendance was not very large, altogether about 700 registering their names, but the sections were well attended, and the interest in the business was kept up until the very last moment; indeed some sections did not succeed in getting through their allotted programme of work.

There was a considerable contingent from America, and a number of French doctors of more or less prominence. While the presence of these is of great interest, it is certainly desirable that only those who have sufficient fluency to express themselves in the English language should be asked to take prominent parts in the meeting. The majority of the members of the British Medical Association are not fluent French scholars, and even those who have some acquaintance with the language feel the effects of the mental strain required for following a speech of an hour's duration in a foreign language. While in a critical mood one may further question the advisability of a tendency to an increase in the number of what may be called "side shows." Doyen's cinematograph exhibitions have already attained considerable notoriety, and it is questionable whether such exhibitions, or even an interesting one such as that of high tension electrical currents, are the proper way to bring novelties under the notice of the profession. In the Exhibition, which is an annual feature of these meetings, there is ample accommodation and every facility for the demonstration of the apparatus, and a paper read in one of the sections would not only give the introducer the opportunity of informing members of his methods, but would give the opportunity for discussion and inquiry into their advantages or the reverse.

But the most important part of the Cheltenham meeting was the business meeting, at which was discussed the report of the Constitution Committee. This committee, it may be in the recollection of readers, was appointed last year at Ipswich on the motion of Mr Victor Horsley, and consisted—the words are used in no invidious sense—of twelve rabid reformers and twelve of what Sir Wilfred Lawson calls "long-horned" Tories. The interim reports of this committee have been discussed by all the branches, and were reconsidered by the committee, who presented their final report at the Cheltenham meeting. Briefly, the report suggests that the business part of the Association be disassociated from the general meetings, and that it be conducted in a special meeting which shall be attended only by representatives elected by divisions in different parts of the country, not for their professional, social, or scientific eminence, but for their views on any burning medico-political questions. It is noteworthy that the report of the committee was practically unanimous. There was give and take on both sides, and close association brought apparently different views and their holders together, but that the meeting accepted this report with such good humour and practical unanimity was due to the happy and it is said almost accidental choice of certain individuals. The speech in which the report was introduced by Mr Edmund Owen was a masterpiece of diplomacy. He put his audience in good humour at once, and kept up a constant ripple of laughter by his humorous allusions. The picture which he drew of Mr Horsley tying his persecutors to the stake, and so arranging the faggots as to get a maximum of heat from a minimum amount of fuel appealed warmly to the audience, and his allusions to Mr Whitaker with his readiness to undergo martyrdom were quite touching. These allusions, however, were only the decorations of his running commentary on the report, and when he had related his *piece de resistance* in the story of the Perthshire branch's reception of the report, and had sat down, one felt that the report was as good as carried. The allusion to the Perthshire branch was so apt that in case any of the readers of this Journal have missed it, it may be repeated. Mr Owen said, "And then the report went to the branches, and they were asked to state their views upon it. They were provided with a table in which the different points of the report were set forth, and against them were spaces for comments. 'A' meant approve, and 'D' meant disapprove. Perthshire said, 'D.'—the whole thing." The adoption of the report was seconded by Mr Horsley, and then began the discussion.

If the Association owes much to Mr Owen, Mr Whitaker and Mr Horsley, it owes very nearly as much to the extremely

tactful conduct of Dr Ferguson in the chair. He put himself entirely in accord with the meeting. When the meeting wished the discussion to be continued, the President allowed it to go on. When he was satisfied that sufficient had been said, he, in the most genial way, declined to hear any further speeches. To one familiar with the spirit which too often has pervaded these general meetings, it was very obvious that a little less tact, a little less genial good humour, and the temper of the meeting might have arisen, and the whole thing been wrecked.

It is not to be understood that there were no amendments; some of the Conservative members of the Council tried to apply the drag, but the meeting had very nearly made up its mind to accept the report, the whole report, and nothing but the report, and amendments had a very poor chance. One was carried, that with reference to the source of the money for the expenses of the representatives, against the recommendation of the Treasurer. The committee's report had left it open whether the expenses of the representatives should be defrayed by the branches or by the central funds of the Association. The meeting insisted that they should be defrayed from the central fund. With that exception, and a few verbal alterations, the report as issued in the *British Medical Journal* a few weeks ago was adopted practically in its entirety.

But, of course, the matter is not yet over. Alterations in the bye-laws require confirmation at one or more special meetings of the Association. These will be held probably in London during the winter, and it is earnestly to be hoped that those with whom democratic measures are unpopular will at least give the new experiment a trial, and not pursue what it is so easy to pursue, a simple policy of "wrecking."

The effect of the proposal on Scotland will be to leave matters very much as they are; probably we shall lose one or two Council representatives, but it must be borne in mind that the scheme proposes to diminish the Council by nearly one half, a change which those who are familiar with the Council are quite ready to admit is for the better. The scheme of representation is an elastic scheme; the theory is that each assemblage of fifty medical men shall have one representative, but special consideration is to be given to the districts where the circumstances are peculiar. It would be as absurd to divide Edinburgh and Glasgow up into little constituencies of fifty as it would be to insist that the whole North-West of Scotland should go unrepresented because they could not total the necessary half hundred. These representatives, and it will be noticed that that word has been substituted for the word delegate, are on most occasions to record one vote, but when

the circumstances are such that the new constitution requires a two-thirds majority it will be open by some means to insist that voting be by card, and then each member will carry with him the number of votes that there are electors in his division. This system of voting has been to many a stumbling-block, and to others foolishness, but after all it is very nearly the same thing as Parliamentary representation, where a member's one vote represents the voting power of every elector in his constituency, although he may have been elected by a majority of one and by an actual minority of the voters. Supposing Edinburgh to have four representatives, and the North-Western counties of Scotland one, on ordinary occasions these would vote respectively with their four and one votes, but on a special formal ballot the Edinburgh representatives would throw into the scale the votes of the four or five hundred members of the Association who reside in and around the city, while the North-West representative would vote with the number of electors in his.

N. W.

Meetings of Societies

Forfarshire Medical Association

THE forty-third annual meeting of this Association was held in Carnegie House, Sunnyside Asylum, Montrose, on July 4th, 1901, at 4 P.M.—Dr Havelock, President of the Association, occupied the chair.

The secretary's and the treasurer's reports were read and approved. Dr Templeman moved, seconded by Dr Buist, that the following office-bearers be elected for the ensuing year. Professor MacEwan, Dundee, president; Dr Sturrock, Broughty Ferry, and Dr Peter Campbell, Dundee, vice-presidents; and that Drs M'Farlane and A. J. Duncan be elected as new members of council in succession to the two retiring members.

This was agreed to.

The alterations in the rules, of which notice had been given last year, were agreed to with some verbal alterations.

The President thereafter gave an address on "Modern Improvements in the Treatment of the Insane," which appeared in the August number of this journal. Dr Buist proposed a hearty vote of thanks to the President for his address. The members then adjourned to dinner, which was served in the recreation hall in the main asylum building. Provost Melvin presided, and was supported on his right by the President of the Association, Dr M'Laggan Wedderburn, Surgeon-General Don,

Dr Grant; on his left by Professor MacEwan, Dr Key, Dr Wemyss, and Dr Alexander. The croupiers were Dr Sturrock, supported by Dr Stone and Dr Johnston; and Mr Alex. Lyell, Secretary to the Asylum Managers, supported by Dr Rorie and Principal Mackay. The others present were Drs Urquhart; Fraser, and Connon, Montrose; Aymer, Bervie; T. F. Dewar, Gilruth, Arbroath; Paton, Carnoustie; Peterkin, M'Allister, Cable, Forfar; Urquhart, Perth; Gowans, Broughty Ferry; Campbell, Glenesk; Templeman, Kynoch, Duncan, Lawrence, Foggie, Brush, J. M. Whyte, Buist, Guild, Gray, Halley, M'Gillivray, Dundee; Dr Orr, Tayport; R. B. Campbell and Kellet, Sunnyside: Mr J. M. Ross, W. D. Johnston, Montrose; Rev. James Landreth, Logie Pert; Mr D. S. Campbell, Montrose, Directors.

Apologies were intimated from Dr Lawrence, Montrose; Dr Mackness, Broughty Ferry; Dr Adam, Brechin; Dr Sinclair, Brechin; Drs Sinclair, Graham, Campbell, and Peter Campbell, Dundee; Dr Constable, Leuchars; and Dr J. A. Dewar, Arbroath. A dinner which reflected credit on the culinary department of the Institution having been partaken of, the Chairman gave "The King," which was enthusiastically drunk. "The Imperial Forces" was next given, and responded to by Surgeon-Major Dewar of the Fife Yeomanry, who in his reply referred to the work he had seen done by the Royal Army Medical Corps in South Africa, and said no other medical corps in the world could have done more under the special difficulties encountered. Captain M'Gillivray, 1st Forfar Volunteer Artillery, replied for the combatants.

Rev. J. Landreth, Logie Pert, then gave "The Forfarshire Medical Association," referring to the fact that it was now in its forty-third year, and that it had demonstrated a superior vitality to similar associations, in respect that whilst many of these had been absorbed into the British Medical Association, the Forfarshire Association still held out. They were often told, he said, that doctors differed, but their differences were only on the surface. Between the members of the association there were strong links of sympathy and kinship, arising out of a common faith, a common end, and the common obstacles they had to pass through.

Dr Key, one of the three remaining original members, replied. In his reply he said he would like to express their sorrow that his friend Dr Miller was not present that afternoon, more especially considering the reason for his absence. There was no truer man connected with the profession than Dr Miller. He also said he would be sorry to see any symptoms of decay in the Association, which had now attained to a pretty old age, and he

would impress upon the younger members their duty to try and keep it up to what it had been in the past.

Other toasts were: "The Town and Trade of Montrose," proposed by Dr Wemyss, and replied to by Mr J. M. Ross; "The Directors of Sunnyside Asylum," by Professor MacEwan, and responded to by Mr W. D. Johnston; "The President," by Dr J. M. Whyte, replied to by Dr Havelock; "The Chairman," by Principal Mackay. Professor Kynoch proposed the health of Dr Stone for his kindness to the golfers at the club-house.

Obstetrical Society of Edinburgh

THE annual summer meeting of this Society was held in the College of Physicians' Hall, on the 10th July, at 4 P.M. The meeting was devoted to a discussion on "The Management of the Third Stage of Labour."

Professor A. R. Simpson opened the discussion by giving a *résumé* of the management of the third stage amongst savage races and as the older medical writers advised. On the whole the tendency was towards an expectant treatment of the condition of retained placenta, until the masters of obstetrics, in the seventeenth century, noting the dangers of delay, began to practise and to advocate more active interference. The systematic intervention for immediate delivery of the placenta was especially insisted upon by Deventer. It was soon seen, however, that this procedure in the hands of the general practitioner was too often followed by disastrous consequences, and during the eighteenth century there were prolonged controversies as to the proper period for active intervention during the third stage of labour. In our own country, William Hunter took a prominent part in the reaction against early and artificial delivery. Charles White, of Manchester, in 1772, stated that when a pain comes on after the birth of the child "the secundines will be easily extracted by gently pulling the navel string and an easy pressure upon the abdomen by assisting the uterus to contract will be of service." He relates four cases of retention of the placenta occasioning fatal floodings. John Clark, writing in 1793, states that the practice of removing the placenta immediately after the birth of the child, though formerly common in England, has of late been very properly discarded, "so that no prudent man at this time thinks of pursuing it."

Dewers, writing in 1825, says that if the placenta be lying loose in the vagina, it may be removed by drawing on the cord with the left hand while hooking the placenta down with

the fingers of the right hand introduced into the vagina. "The advantage of this is, we prevent a terrible stench by thus removing them, and second, we prevent great alarm sometimes."

Denman says that if the placenta be not expelled at the end of four hours from the birth of the child, it is generally wise to determine upon extracting it. Osborne (a joint lecturer with Denman) entertains a different opinion, however, and expressly states that under no circumstances whatever ought the placenta to be permitted to remain in the uterus for any considerable length of time after the birth of the child.

Churchill in his "Midwifery" advocates that the uterus should be firmly grasped and firm pressure made in the direction of the axis of the brim. In most cases, as the placenta has been detached by the last pains, it will be found to recede under the hand, and will be found in the vagina or in the bed. If not, the nurse should be directed to make pressure as soon as the binder is applied and we should make firm, but steady, and not excessive traction of the cord. He says that rarely has the placenta been retained for more than five minutes under such treatment.

This was for long known as the "Dublin method of expressing the placenta," really pressing or squeezing off the after-birth by an external compression of the uterus with the hand. It was Credé of Leipzig, however, who in 1860 brought the above method prominently under the notice of German accoucheurs. Since then the method has been largely tried, and its great efficiency attested by Abess, Strassman, Goschler, Winckel, Grenser and Spiegelberg.

Professor Kynoch of Dundee said that believing as he did that uterine retraction and contraction was essential for the separation of the placenta, he thought that the expulsion was best left to uterine action alone. He did not hesitate to say that the Credé method as originally carried out was associated with very great risk. When he had adopted the plan of immediate expulsion of the placenta, he had frequently had cases of retention of membranes and hæmorrhage. In his own practice he found that as a rule the uterus separated itself from the placenta in half an hour. Having ascertained by means of tying the cord at the vulva after the birth of the child and by the size of the uterus that the placenta was no longer in the uterus, there was no harm whatever in then expelling it by pressure. He might state that in his hospital he was adopting the conservative method entirely, because it was safer to teach nurses the method of leaving the placenta to come away itself. If they taught nurses Credé's method, they would carry it out at a very early period with bad results.

Dr M'Vie said that he agreed with all that Professor Simpson had said. He thought that the treatment of the third stage might in some cases begin before the first stage commenced as in the treatment of hæmophilia. There were cases also where the prolonged administration of chloroform in the second stage caused some inertia uteri, and where the third stage might be anticipated by the giving of ergotin or strychnine hypodermically to give tone to the uterus. He thought every practitioner would emphatically protest against having to conduct any case of labour on the time allowance. If the uterus did not contract readily in the third stage, then this not being natural the contraction had to be assisted, and the easiest way of doing this was by some stimulant from without. If the uterus had succeeded in expelling the placenta into the vagina, he saw no harm in using the cord and pulling it away. At an earlier period, however, to pull on the cord was really to pull on the uterine wall, and this might easily invert the uterus.

Dr James Ritchie said that if they found that the patient was accustomed to bleeding they should during the latter weeks of pregnancy give strychnine, as was done in London. He was not now in such a hurry to bring away the placenta as he was when he first commenced to practise. He agreed that there should not be a time limit. If the labour had been very prolonged or very rapid, their duty was to wait a much longer time than in a perfectly normal labour. His own practice was, as soon as the child was born he got the nurse to put her hand over the uterus while he tied the cord, then he placed his own hand over the uterus, not to compress it, but merely to see that it was not being dilated with blood. If the patient was going on well, and there was no hæmorrhage, he was willing to wait a long time and allow nature to do what it could. He did not see any objection to Credé's method, provided it was not applied immediately after the birth of the child. If the uterus were not contracting, and the placenta not coming away after a reasonable time, his procedure was to press upon the fundus uteri. If that was not successful he inserted his hand, and endeavoured to get the lower edge of the placenta and pull it down. He did not believe that the uterine clot had anything to do with the separation of the placenta, and in those cases where he found the uterus was being gradually filled up with blood, he felt it his duty to hurry up the expulsion as quickly as possible.

Dr Foulis said that it was a simple matter to manage the third stage of labour if they kept the hand on the fundus uteri constantly. The objections to the Credé method were founded on the fact that they were apt to displace the clots of blood by

too violent compression of the uterus. The swelling up of the uterus after the expulsion of the child was nothing more than the blood being forced into the uterine cavities by the force of the heart's action after these cavities have been partly closed by the clotting of the blood. If they had sufficient patience, and kept their hand on the uterus, clotting would go on until the whole of the sinuses were occupied by a large clot, and after this it was a physiological impossibility for the uterus to swell up again.

Dr F. W. N. Haultain said that the management of the third stage of labour was debatable upon the Dublin and Credé methods of expulsion; that was to say, expulsion by artificial means of the placenta from the uterus by hand pressure (Credé's method) or by expressing the placenta from the vagina after it had left the uterus (the Dublin method). They might assume that in the majority of cases when a woman was placed deeply under chloroform during the second stage, the placenta would not be expelled from the vagina by natural means for two or three hours. To wait that time would be absurd, and he should say that the method they should adopt was as Professor Simpson had said, to wait until the placenta had left the uterus and then to proceed to remove it from the vagina. He did not agree that time was not to be considered. They might not have a time limit but they must have a time guide. They found from a general average that half an hour was the normal time for the placenta to be expelled naturally from the uterus. If it were not expelled in half an hour then he thought that a certain amount of rational artificial means might be used to remove it from the situation. If they removed the placenta by force they used suprapubic pressure and this was generally sufficient to expel it entirely. In some cases, however, it lodged in the vagina and then he saw no objection to the introduction of the finger into the vagina to work the placenta out. He thought that the effusion of blood between the placenta and the uterine wall was a good means of separating the placenta. He did not think it was necessary to be so extremely careful of always keeping the hand over the uterus during the third stage. If they felt that the uterus was contracting, and after an interval if they found it to be still maintaining its contraction they should leave it.

After Dr Ballantyne had spoken, the President conveyed the thanks of the Society to Professor Simpson for the able way in which he had opened the discussion.

Obituary

Dr J. W. Miller, Consulting Physician Dundee Royal Infirmary, etc., etc.

ON Saturday the grave closed over the mortal remains of Dr Miller under lowering clouds and heavy rain; strange contrast to the bright sunny disposition and happy life of the man. Though he had not reached the allotted span by some years, he had done a good lifetime's work, for he graduated early and was early in practice. His almost boyish appearance when he settled in Dundee forty-four years ago was rather against him, and he had his own share of the uphill battles of life, not made any easier by two attacks of typhus and two of rheumatic fever in early years. But nothing could daunt his spirit or embitter his nature, and when he emerged from his struggles into success his fine manly character was as sound as ever. Belonging to a progressive profession, he was one of the most progressive of men. Two of the best attributes of the scientific man he had in perfection—love of truth and the open mind. Thus it was that to the last days of his busy life he was as keenly alive as the youngest of his brethren to discoveries and inventions for the benefit of mankind. No routinist or indiscriminate worshipper of the "good old times," he rejoiced in every advance of knowledge, and his wonderfully receptive mind was never tired of assimilating anything that could be advantageous in practice. At the bedside he was acute, thorough, and painstaking; his clear well-informed brain was always on the alert; and his instructions were plain and well reasoned. A large circle of friends of all ages will long miss the cheery face and the kindly disposition which were as familiar and as welcome as household words. Whatever may have been the use of speech to Talleyrand and his kind, to Dr Miller it was certainly not given to disguise his thoughts. He spoke as he thought—fearlessly, directly, and to the point. A client following evil courses was certain sooner or later, and probably sooner than later, of a bit of his doctor's mind, without any gilding or embellishment to let him down gently and make him think himself not such a bad fellow after all. A high sense of personal and professional rectitude, founded on the simple but sufficient rule of doing to others as you would have them do to you, was a lifelong and an outstanding characteristic, and naturally made him impatient of anything mean or shifty in others. A hater of shams he was all his days.

His contributions to medical literature were marked by careful observation, sound judgment, and lucidity of thought and expression. Some men, it has been said, write for practice, and some write from practice. Dr Miller was content to belong to the latter and less ambitious order. His long connection with the Dundee Royal Infirmary was a source of never-ending pride and satisfaction to him, and no one watched its development and the high aims of its Directors and medical officers with greater pleasure. A warm friend of the Dundee Medical School and a valued member of the College Council, he will be greatly missed in all forward movements. That excellent institution the British Medical Benevolent Fund had in him one of its most active supporters, and very properly rewarded his admirable work by appointing him a Vice-President. For many years he was the trusted and loyal representative of the Dundee and District Branch of the British Medical Association in the Executive Council. His work at the Boards of the Infirmary, the Victoria Hospital, and Free Library was, like all his work, excellent. The Dundee Medical Club, which meets once a month for friendly intercourse, acknowledges Dr Miller as its founder.

No man did so much in his time in Dundee to encourage friendliness and to foster good relations among his brethren, both by example and precept. Conduct, someone, I think Matthew Arnold, has said, is three-fourths of life, and certainly no man's conduct in all the relations of life could have been modelled on better ideals. To be held in equal regard by his clients and his professional brethren is a piece of good fortune which falls to the lot of few men as it fell to our lamented friend.

A singularly happy married life no doubt helped him greatly in putting his best efforts into his work, and it is not intruding too much on his private life to say that a better husband and father never lived. While Dr Miller took no public part in politics, he was a Unionist of very definite and pronounced convictions. In religion he belonged to the unobtrusive communion that attracted by its goodness and simplicity Michael Faraday, the foremost chemist and physicist of his time.

R. S.

Recent Literature

CRITICAL SUMMARIES AND ABSTRACTS

MEDICINE

THE ACTION OF THE XANTHIN GROUP OF DIURETICS

By FRANCIS D. BOYD, M.D., F.R.C.P.Ed.,
Assistant Physician to the Royal Infirmary

MUCH work and ingenuity has been expended to elucidate the problem of the secretion of the different constituents of normal urine, and until the question is finally decided the action of diuretic drugs must be a fruitful source of discussion. Are the nitrogenous constituents of the urine excreted by the epithelial cells of the convoluted tubules, or is the function of those cells merely to absorb water and thus concentrate the urine already secreted by the glomeruli? Anten (*Archives Internationales de Pharmacodynamie et de Thérapie*, vol. viii. Fas. v. and vi.) contributes a paper on the diuretic action of the caffeine and theobromine, in which he opens with the discussion of individual action of the glomerulus and the epithelium of the convoluted tubules, and claims to have finally solved the question as regards the excretion of uric acid.

The experiments were done upon the living dog. The femoral artery and vein were exposed, clamped, and canulæ introduced. All the other branches of the abdominal aorta and inferior vena cava were ligatured. The kidney was then perfused with a solution of silver (ammonio-nitrate), the silver being ultimately washed away by perfusing with normal saline solution. The kidneys were removed and examined. The uric acid in the kidney was found precipitated as a silver salt. The precipitate of the silver salt was present for the most part in the cells of the convoluted tubules, not in the portion of the cell next the lumen of the tubule, as would have been the case had the uric acid passed in with water from the tubule, but was at the peripheræ of the cell next the basal membrane. The author draws the conclusion from his observations that the uric acid and probably also the urea of normal urine is excreted by the epithelial cells of the convoluted tubules and the ascending limb of Henley's looped tubule and not by the glomeruli. The observations are in line with the conclusions formerly advanced by Heidenhain, confirmed by Minkowski and by Spiegelberg.

Granting, then, that urea and uric acid are excreted by the

epithelium of the convoluted tubules, much information as to the action of diuretic drugs can be obtained by a consideration of their influence on the urinary constituents. Working with the Xanthin group (caffeine, theobromine, etc.) Anten found in the dog that the administration of theobromin caused an increase in the excretion of the water and a marked increase in the solids of the urine. In man, again, an increased excretion of solids went hand in hand with the diuresis. The proportion of urea in the urine suffers but little modification in the Xanthin diuresis, while it diminishes considerably in a saline diuresis. The Xanthin diuretics increase the total nitrogen and the urea nitrogen, while the salines increase the watery excretion without proportionally increasing the total nitrogen or urea nitrogen.

It had formerly been stated by Albanese (*Arch. für Exper. Path.*, vol. xxxv.) that the Xanthin group of diuretics increased the excretion of purin bases; but Kruger and Schmid (*Zeitschr. für Physiol. Chemie*, vol. xxxii. p. 104, March 1901) now deny this, pointing out from elaborate analysis that the increased excretion is apparent not real, and results from a calculation of the caffeine nitrogen with the purin base nitrogen.

That the diuretic action of the Xanthin group does not depend upon circulating changes is shown by Schwarz (*Arch. für Exper. Path.*, vol. xliii., 1900), who points out that in the dog there is no increase in the quantity of blood passing through the renal vein in a given period under the influence of caffeine and theobromine; and Bock (*Ibid.*) finds that under large doses of the drugs the blood pressure falls.

The practical conclusion to be drawn from these observations appears to be that the Xanthin diuretics have their most useful field of activity in conditions where it is desirable to produce diuresis by acting directly upon the kidney epithelium, and not by influencing the circulation in the kidney. Stimulating the epithelium of the tubules, the drugs produce an abundant secretion of water, of urea and of salts. No lymphagagne action is induced, nor do the drugs have any action upon glomeruli through raising the osmotic equivalent of the blood, as is the case where the saline diuretics are used. Caffeine, and theobromine and its compounds, diuretin and uropherin, have, then, their field of usefulness where cellular activity in the kidney is at fault, and not where errors of circulation are the cause of anuria; and it is the neglect of these facts, and the indiscriminate use of the drugs, that results in failure and dissatisfaction in the hands of the practitioner.

Klempner (*Berlin Klin. Wochensden*, 1896) has strongly advocated the internal administration of urea as a diuretic, on the grounds that it is the natural diuretic and stimulant

of the kidney epithelium. Other observers have not, however, obtained the same good results with urea. If a diuretic drug be indicated in a given case of anuria, it is but natural to conclude that there is no deficiency of urea in the blood. Kohn and Bettman have found its use uncertain and disappointing. It cannot be too strongly insisted that the disappointment which in the hands of some observers has resulted from the use of the Xanthin group of diuretics is due, not to the fault of the drugs, but to their indiscriminate use, and to a neglect of the importance and bearing of the circulation in the kidney upon the secretion of urine. In cases of cardiac failure with deficient circulation in the kidneys, secretory stimulants are liable to give disappointing results unless combined with cardiac tonics. With improved circulation the action of the drugs is increased in intensity and duration.

SURGERY

FALLACIES IN THE RADIOGRAPHY OF FRACTURES

By ALEXANDER MILES, M.D., F.R.C.S.Ed.,
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PROBABLY no discovery in abstract physics ever excited such immediate and general interest as did that of the X-rays by Röntgen, in 1896. No sooner had he announced it before the Physico-Medical Society at Wurzburg than the public, lay and scientific, became intensely interested in every phase of its development. To the laity it seemed little less than miraculous that we should be able "to see through the body," as they incorrectly phrased it—although, after all, it would be no more wonderful that we should see through the body than that we see it at all.

To the surgeon the interest of the discovery lay in the aid it promised him in the recognition of injuries and other lesions of the bones and joints, in the detection of foreign bodies embedded in the tissues, and in certain other directions. As usually happens at first, too much was expected of the new method, and the enthusiasm of its earlier exponents—excluding always its distinguished discoverer—led them to form exaggerated opinions of its value and importance in the practice of surgery and medicine. Thus we find one writer (1) state, in italics, that by the use of the X-rays in the diagnosis of fractures, "accuracy takes the place of ignorance and doubt, and painful manipulations cease to be necessary for diagnostic purposes.

The same author, by inference, divides the history of surgery into two eras—the "pre-Röntgenian" and "Röntgenian." In another work on fractures (2) we find it stated that "a diagnosis of fracture without skiagraphs is always open to doubt, while with a careful X-ray examination there is seldom a doubt."

It cannot be too strongly urged that this tendency to make the ordinary signs and symptoms of fractures and dislocations subsidiary to the evidence afforded by radiographic plates is fraught with danger, and is calculated to do much harm by leading the surgeon to neglect manipulative examination and deductive reasoning in favour of purely mechanical methods of diagnosis. That such a tendency exists cannot be denied, and it is, unfortunately, in the large teaching hospitals that the temptation to rely on the easily obtained evidence of the radiogram is strongest.

The teacher of surgery should remember that the majority of his pupils will practise their profession under conditions in which a routine appeal to the X-rays will be impossible. The student, therefore, should be taught to rely chiefly on the ordinary diagnostic means — by considering the mechanism by which the injury was produced, the physical signs in the injured part, and the associated symptoms. Only when these fail, or when for some special reason it is desirable to determine with perfect accuracy the exact condition of the bones, should he feel it to be *necessary* to have recourse to radiography; of course, if such aid as the rays afford can be readily obtained without loss of time, or without unnecessary expense to the patient, the practitioner should avail himself of it, but he should not allow himself to come to rely on it as his chief diagnostic aid. Nor have we any sympathy with that attitude of mind which leads some to recommend that the practitioner should have a radiogram taken "for his own protection." It not only argues a want of reliance on his own capacities, but suggests a relationship between doctor and patient which it is not pleasing to contemplate. This apart from the fact that in many cases he would only be making a stick to break his own innocent head.

The additions made to our knowledge of fractures through the introduction of the X-rays have almost entirely related to the pathology of these injuries, and have been in the direction of rendering our previous knowledge more accurate, rather than of establishing new facts or of controverting those which have long been accepted. Our methods of treatment have been practically unaffected by the discovery, except perhaps in so far as it has stimulated some surgeons to operate on cases of simple fracture which previously would have been treated on ordinary

lines. There is reason to believe, however, that in many cases operative treatment appeared to be necessary because of imperfectly taken, or incorrectly interpreted radiograms, and the tendency towards it is one which should be kept in check.

The early enthusiasm has, however, been followed by the inevitable reaction. The novelty has worn off, and surgeons are now asking themselves if after all the evidence with regard to fractures afforded by radiography is as valuable as they at first supposed. This inquiry, it must be admitted, has been stimulated very largely by the fact that the laity has come to place the same high value as the surgeon once did on the radiographic picture, and that this "production" has come to play an important part in the law courts, not always on the side of the practitioner.

It must be borne in mind that a radiogram is not a photograph of the object exposed to the X-rays, but it is merely a picture of its shadow, obtained in virtue of the fact that the rays vary in their capacity of penetrating structures of different densities. The more dense the tissue the more X-ray light does it cut off, and the deeper is the shadow cast by it. The bones therefore, being much more dense than the soft parts, cast a much darker shadow. The variations which occur in the depth of the shadows of the soft parts depend on their bulk as well as on their varying density.

As the rays proceed from a *point* in the vacuum tube, and as they are not parallel, the shadows which they cast are necessarily distorted, and incorrect in perspective.

In interpreting a radiogram, therefore, it is necessary to know the relative positions of the point from which the rays proceed, the object exposed, and the photographic plate on which the shadow is registered. The shadow of that part of the object perpendicularly under the point from which the rays proceed is as nearly accurate as possible, but the parts lying outside this are distorted in proportion to their distance from the perpendicular. The nearer the object is to the plate the less is the distortion—any want of parallelism between the object and the plate also causes distortion.

On a radiographic print, therefore, should be marked the point which lay perpendicularly under the source of the light, the distance between the light and the plate, and the position occupied by the limb while the radiogram was being taken, as well as the attitude in which it was placed, *e.g.* flexion, extension, etc.

It goes without saying that even after making allowance for these distortions and alterations in perspective, an accurate knowledge of anatomy and a familiarity with the radiographic

images of corresponding normal parts are essential to the correct interpretation of the radiograph of a fracture. No radiogram should be accepted as evidence of the state of the bones unless it has been taken by or under the direct supervision of a medical expert.

To ensure absolute accuracy in the diagnosis of fractures it is necessary to take at least two views of the limb—one antero-posterior, the other from side to side. In some cases an oblique view may give valuable information. By the use of the fluorescent screen the best position from which to obtain a clear impression of the fracture may be determined before the photograph is taken.

It is needless here to dwell upon the invaluable aid which the X-rays lend in the recognition of fractures, more particularly in the region of the joints, and in deeply-seated parts. This is now a matter of every-day experience. We are rather concerned with noting the possible fallacies attending their use. To avoid misunderstanding it may at once be admitted that these fallacies are not inherent to the method, but are almost entirely due to faulty technique or to incorrect interpretation of the pictures obtained.

In the first place great care is necessary in interpreting the skiagram of a bone which is overshadowed by other bones, as, for example, the ribs, the sternum, the vertebræ or the shoulder-girdle. In view of what has been said regarding the causes of distortion of the shadows cast by bones of varying thickness and in different planes it is easy to understand how readily, on the one hand, the appearance of a fracture may be simulated; or on the other, the evidence of a fracture may be obscured by overlapping shadows. Lucas-Championnere (3) reports the case of a patient with a perfectly sound and useful lower limb, who, after complete recovery from the effects of a contusion of the thigh, was led by a skiagraph of the injured limb to believe that he was the subject of an overlooked and ununited fracture of the femur. A shadow on the upper part of the bone cast by the ischium and a clear band below this were supposed to represent the serious nature of the injury. A similar case is referred to in which a skiagraph seemed to indicate a fracture which did not exist in the region of the wrist.

In the region of the elbow also the distortion of the different bony prominences is liable to give rise to appearances which may readily be mistaken for fracture. For example, the light traversing the cavity of the joint may show a pale streak across the olecranon process, as seen from behind, which is liable to be misinterpreted. This is admirably illustrated in a radiogram which accompanies a recent paper by Mr Golding Bird (4). It

is needless to refer to the possibility of confusing an epiphysial line with a fracture. In young subjects the ossifying centres of the smaller epiphyses in the vicinity of the elbow may be mistaken for separated fragments of bone.

In the region of the hip, foreshortening of the neck of the femur may give the appearance of an impacted fracture.

In the leg the distortion and altered perspective of the two bones may cause the fragments to appear very wide apart, and to overlap, even although they are in tolerably good apposition.

The os trigonum tarsi has more than once been mistaken for a fracture of the astragalus—an error which in one case at least led to prolonged litigation.

Goodspeed has pointed out that any movement on the part of the patient while the radiograph is being taken may obscure the line of a fracture in which there is little displacement. This is not so likely to occur now that the time of exposure has been so much diminished. Where the fractured ends are in accurate apposition, and there is practically no displacement, a single view may fail to show any sign of fracture. A case of this kind is reported by Ovary, in which there was most distinct clinical evidence of a Colle's fracture, and yet even the negative of a radiograph gave no indication of it.

Referring to the use of the X-rays in testing the accuracy with which a fracture has been set, Golding-Bird, in the paper already referred to, quotes Mr Shenton to the effect that "in the bulk of indirect fractures which have been 'set' and treated in the best possible manner short of operation, the skiagraphs show an apparent maladaptation of the bones, which, taken alone, would seem to indicate a hopeless failure on the part of the surgeon, and yet the result to the patient is that he gets well, with a perfectly sound and functional limb, without shortening and with only a callus thickening, which will disappear in time, to indicate his fracture."

In observing the progress of union by means of skiagraphy it is to be remembered that in the early stages of its formation callus gives no shadow, so that even when fibrous union is fairly far advanced, and there is little or no movement between the fragments, the radiographic picture indicates a wide interspace between them. In a case of fracture of both bones of the forearm recently reported (5), four months after the accident, while there had been distinct and firm bony union, the Röntgen picture appeared to indicate that union had not taken place.

When the callus is sufficiently impregnated with lime salts to cast a shadow, the distortion often makes the mass appear much larger than it really is (Lucas-Championnere), and sometimes seems to show great thickening of the bone where no

callus exists. Radiography has, however, shown that in children the callus spreads much further along the bone than it does in adults [Manoury (6)]. It has also become evident from a study of radiographs of united fractures that very imperfect coaptation of fragments, and an exuberant out-throwing of callus, is quite consistent with a perfectly-useful and well-formed limb. As Manoury puts it, "Perfection of form is not indispensable for the satisfactory restoration of function"—a fact which should be borne in mind by those who advocate the operative treatment of simple fractures on the strength of the evidence afforded by radiography alone. This is well illustrated by a radiograph which accompanies Golding-Bird's paper. It refers to an ordinary spiral fracture of both bones of the leg, caused by indirect violence, in which, one month after the injury, there was firm callus union, resisting the surgeon's efforts to get any movement; yet the skiagraph shows no union; a screen examination a month later still showed no union. Duke's case (7) illustrates the same point.

It would appear, therefore, that, however highly we may appraise the value of radiography in relation to fractures, there is considerable danger in relying implicitly on the evidence which it affords, and that only after carefully discounting the possible fallacies can we allow a radiogram to weigh against the ordinary clinical signs and symptoms of such injuries.

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PATHOLOGY

TUBERCULOSIS IN MAN AND THE LOWER ANIMALS

By THEODORE SHENNAN, M.D., F.R.C.S.Ed.,

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THIS paper is an attempt to bring together some experimental and clinical evidence in support of the theory of the intercommunicability of tuberculosis of man and the lower animals.

This question has been forced to the front by Koch's dicta; delivered at the recent British Congress of Tuberculosis, held in

London :—firstly, that "human tuberculosis differs from bovine and cannot be transmitted to cattle; and secondly, that the extent of infection by the milk and flesh of tuberculous cattle and the butter made from their milk is hardly greater than that of hereditary transmission, and that it is inadvisable to take any measures against it." (*Brit. Med. Journ.*, July 27, 1901.)

It must be noted that Koch's conclusions refer only to tuberculosis of cattle, and that he excludes other animals as unsuitable for his purpose; but in this digest the possibility of infection of or from other domestic animals will not be lost sight of, and reference made to the literature dealing with the dangers from such sources.

In support of his conclusions, Koch brings forward very strong experimental evidence. He used cattle which had been proved by the use of tuberculin to be free from tuberculosis. He found that inoculation and ingestion of human tuberculous material and of pure cultures of the bacillus were invariably without result, except that, occasionally, small suppurative foci were found at the site of inoculation, whereas inoculation of bovine tuberculous material as invariably caused generalised tuberculosis.

He did not obtain such uniform results in feeding pigs with similar materials, as in some of those fed with tuberculous sputum "little nodules are found in the lymphatic glands of the neck, and in one case a few grey nodules in the lungs." With bovine material on the contrary they all, without exception, developed severe tuberculosis.

Similar results were obtained by injecting cultures into the vascular systems of asses, sheep and goats, which it must be noted, are looked upon as, comparatively speaking, insusceptible.

From these experiments he concludes that human tubercle is different from bovine, and cannot be transmitted to cattle.

Provided one could argue straight from experiment to nature, one might look on this subject as practically settled; but considering how common it is for experiments to bring out results contradictory to natural findings, one must not too hurriedly conclude that the results obtained by hosts of observers from Villemin, Chauveau, Klebs, Böllinger, and Nocard downwards, during the last thirty years, and the teachings based on these results, are totally erroneous.

During the further course of the Congress, at a discussion on Tuberculin, Koch stated that the tuberculin used in these experiments was made from tubercle bacilli of human origin, but that the reaction was produced both in man and in cattle, and though the two bacilli were different they possessed a "group" reaction (*Brit. Med. Journ.* ii. 1901, p. 214). Such a result rather argues in favour of a close similarity, if not the

identity, of the two bacilli, and would support the commonly accepted view that human, bovine, and avian tuberculosis are of common origin, though having undergone certain modifications depending on environment—that there are *three* varieties, but only *one* species. Granting, however, for the sake of argument, that the bacilli are different, might one not expect that their tuberculins should be, if not chemically, at all events physiologically, different; and though it is denied that tuberculin in small doses has any protective influence, it would be well to repeat these experiments on animals tested with bovine tuberculin.

Before proceeding to examine the literature of the subject, we must remember that the views enunciated by Koch are by no means new. So long ago as 1894, M. Alexandre (*Le Progrès Médical*, Paris, Sept. 29) held, as a result of the examination of 20,000 cows in the Department of the Seine, that the consumption of the flesh and milk of our domestic animals was not the cause of the terrible mortality from tuberculosis among mankind, and that it was important that this once accepted belief be thoroughly rooted out of our minds.

Relationship of the Bacilli of Human, Bovine and Avian Tuberculosis.

In dealing with the extensive literature of this subject, we shall consider, firstly, the experimental evidence—that gained from examination of the biological, morphological, and pathogenetic properties of the bacilli—and then pass to the clinical evidence of similarity or difference.

As we have already seen, Koch, with others, considers that human, bovine, and avian tubercle bacilli are distinct, and present microscopic, cultural, and pathogenetic properties, by which they can always be distinguished. He is supported by numbers of observations made by many different scientists, and Virchow with his followers has always insisted on the difference particularly between human and bovine tuberculosis.

On the other hand, there exists just as strong evidence, supported by men of high standing and authority, which goes to show that this difference, though apparently distinct in the laboratory, is not so clear in the realm of nature, and simply depends on a modification of one original organism.

It is undoubted, as shown by the experiments of Koch (*loc. cit.*), and by those of Ravenel (*Lancet*, Aug. 1901), Theobald Smith, Frothingham, etc., that bovine tuberculosis is much more highly virulent than human, and produces extensive disease in animals in which human tuberculosis produces only a local or slight lesion. It is also undoubted that it is difficult

to inoculate cattle with human tuberculosis and fowls with bovine, or, speaking generally, with mammalian tuberculosis; but while these differences, which may be termed laboratory differences, exist, and while in the laboratory the cultures are very tenacious of their individuality, it is quite certain that in nature the tubercle bacillus has a large range of adaptability. Experiments can be so carried out as to approximate the characters of the three varieties, and from experimental and clinical data it can be shown that they are in many instances intercommunicable.

1. Laboratory and Experimental Evidence.

(*a*) *Variability of Cultures.*

It is well known that the bacillus of mammalian tuberculosis grows typically in a fashion quite distinct from that of avian tuberculosis: the former producing a dry, greyish, scaly growth; the latter a moist, softer, more voluminous growth. Microscopically, the bacillus of human tubercle is usually long, narrow, and may show "beading"; that of bovine tubercle is short, thicker in proportion to its length and stains uniformly, but these distinctions are not absolute.

Nocard succeeded in so modifying cultures of mammalian tubercle that they became like those of avian tubercle, and also resembled them in pathogenicity. He found that cultures of mammalian tubercle, if placed in collodion sacs and grown for a length of time in the peritoneal cavity of fowls, gradually became fatal to fowls and took on the cultural characters of avian tubercle. (Congress on Tubercul., Paris, 1898)

Fischel and Mafucci (*Lubarsch u. Ostertag.* 1895, p. 233) were able to modify the appearance of mammalian and avian tubercle bacilli by cultivating on different media and at different temperatures. For example, if mammalian tubercle were grown on serum made from hen's blood, the resultant culture was like that of avian tubercle. They also found that mammalian bacilli when grown on eggs, and on boracic acid, *i.e.* boracic acid agar, or thymol-glycerine-agar, developed long filaments showing multiple branching. On dogs' blood serum a development took place like that of avian tubercle. More important still, by growing on boracic acid agar, Fischel obtained cultures of mammalian tubercle which no longer showed marked virulence for rabbits and guinea-pigs but displayed effects in these animals like those of avian tuberculosis.

Ravenel (*loc. cit.*) concludes from his experiments that there are not sufficient data to differentiate between human and bovine tuberculosis either by culture, by morphology or by

virulence. In cultures on the same medium, the different types of the bacilli are as a rule fairly well retained, but on different media they change their characters. In the tissue and body-fluids they also vary, the bovine bacillus being frequently long and beaded, though usually resuming its presumably characteristic shape on cultivation.

(*b*) *Experimental Evidence as to Pathogenicity.*

Some of this has already incidentally been referred to in touching on the variability of the bacilli.

To begin with, it has been abundantly proved that the bacilli as occurring in cattle are more virulent if inoculated into the lower animals, than those of human tuberculosis. This is a fact which scarcely admits of dispute.

In the case of human bacilli—for example, as contained in sputum—a mixed infection often takes place, the associated organisms being apparently necessary for the full development of the lesion.[1] Ravenel (*Lancet*, Aug. 1901) inoculated four calves of nearly the same age, intraperitoneally, with a uniform quantity of tuberculous sputum from different sources, but all containing numerous bacilli. One calf was unaffected. Of the remaining three, in which infection had taken place, two showed very extensive lesions of the nature of "grapes" or "perlsucht." The fact that the characteristic bovine manifestation of tubercle developed after inoculation from man is of special interest, and will be referred to again.

In the case of pigs, he found that five out of six inoculated with human material died after a considerable time. From these pigs he inoculated others, producing a rapidly fatal diffuse tubercular pneumonia, the virulence of the organism having apparently been raised by passage through the former animals.

To compare with these results he inoculated other animals under similar conditions with an equivalent dose of bovine tuberculous material, and found that this was much more virulent for all animals.

Chauveau (Congr. for Tuberc., Paris, 1891) reported as a result of his investigations that bovine tuberculosis was identical with human. He found that the ox could be infected with tuberculosis by ingestion of tuberculous material derived from man, and also by intravenous and subcutaneous injection.

Nocard (*Nouveau Dict. pratique*, 1892, p. 476) refers to

[1] This doubtless explains the conclusions of Pansini (*Gazz. degli ospitali*, Naples, quoted in *Ann. of Univ. Med. Sciences*). He found that the bacilli of human tuberculosis were less virulent in pure culture than in tuberculous material or sputum.

M. Chauveau as having shown that the two diseases in all their forms are inoculable in young cattle.

Böllinger (*Munch. Med. Wochenschr.*, Jan. 1894) records an experiment performed long before. He inoculated a healthy calf—three months of age—intraperitoneally with tuberculous fluid from a human being. Seven months later characteristic "perlsucht" of the peritoneum was found.

The results obtained by these observers, therefore, appear to go straight in the teeth of Koch's conclusion that human tuberculosis is not transmissible to cattle.

The evidence with regard to experimental infection of *fowls* is very variable, and at times conflicting.

Strauss and Wurtz (Paris Congr. Tuberc., 1888) fed fowls for a year on tuberculous sputum without effect, thus affording an example of the anomalies of experimental bacteriology, seeing that there are quite a number of cases in which domestic fowls, under natural conditions, have been infected by swallowing sputum from a consumptive attendant.

Nocard (Paris Congr. Tuberc., 1898) and Pansini were able to infect fowls through ingestion of human tuberculous material.

Nocard, Vignal, Gamaleïa, and others (Paris Tuberc. Congress, 1888), reported that they had failed to inoculate fowls with human tubercle.

Courmont and Dor (Paris Congr. Tuberc., 1891), and also Klein and Fischel, succeeded in infecting fowls with human tuberculosis by inoculation.

Cadiot, Gilbert, and Roger (*Le bulletin médical*, Paris, Dec. 1898) succeeded in infecting five out of six hens with mammalian tubercle. In another series of forty hens they succeeded in four cases. They also found that parrots were very susceptible, the disease developing in all the cases—three—they inoculated.

There is thus evidence to support the statement that fowls may be infected experimentally from human tuberculous material.

2. Clinical Evidence.

In considering this part of the question, cases illustrating transmission of tuberculosis from man to the lower animals will be first considered, and then we shall be free to take up the more important evidence with regard to transmission of tuberculosis of the lower animals to man.

Cattle.—There are few trustworthy reports of transmission of tuberculosis from man to cattle. The only one I can find is

one quoted by Nocard (*The Animal Tuberculoses*, trans. 1895, p. 80). In one herd seven out of twenty-four cows became infected by means of tuberculous material expectorated or vomited by a cowherd the subject of pulmonary tuberculosis. No other origin could be discovered.

Dogs.—Nocard (*loc. cit.*) refers to infection of dogs by ingestion or inhalation of expectorated bacilli from consumptive patients, and indicates that infection may also take place in the reverse direction.

Fowls.—Tuberculosis is a very common disease of birds. There are some instances reported of infection of fowls with human tuberculosis. This is to a great extent opposed to the experimental evidence, probably from the fact that in experimentation all the conditions of the natural infection are not realised.

They may be infected with tubercular sputum from their attendants, and tuberculosis has been observed in fowls reared in abattoirs, where they have been fed on contaminated meat or tuberculous viscera (Nocard, *Nouv. Dict.*, 1892, p. 513).

The case reported by M. Cagny is well known. In *La Semaine Medicale*, 1888, he describes a case of transmission of human tuberculosis to poultry. A number of chickens belonged to a family, one member of which was suffering from pulmonary phthisis. The chickens all became tuberculous, and had to be destroyed. Tuberculosis of the liver was the principal manifestation found after death. M. Cagny learned that the sick man was in the habit of walking in the garden, and that it had been noticed that the chickens eagerly seized and swallowed the material he expectorated.

Sir Chas. Cameron (*Lancet*, July 1889) refers to this question, and quotes a case in which about fifty hens died within a period of three to four months. The deaths began to take place some weeks after the arrival of a consumptive patient in the house near which the fowls were kept.

Mallerée (quoted, *Lubarsch u. Ostertag.*, Abth. ii. 1895, p. 235), relates a case in which hens developed tuberculosis from ingestion of the expectorations of a consumptive, and in their turn, being eaten raw, passed on the infection to a woman. A mother and child developed consumption. A young woman in a neighbouring house, during a period of four months, ate eleven hens which had died in the consumptive's house, and with the idea of obtaining as much benefit as possible, she consumed them raw. Several of the hens had developed tuberculosis of the intestine and liver from eating the tubercular expectorations. The young woman developed tuberculosis.

These reported cases are not numerous, but they are

authentic, and made by careful observers, and must be awarded due consideration. They prove that under natural conditions, or rather one might say the unnatural common conditions of civilisation, infection may occasionally take place from man to the lower animals.

The next part of this article will deal with the transmission of tuberculosis from the lower animals to man.

Bibliography—In addition to the literature referred to in the text, a full bibliography is given at the close of the article "Tuberculose," by Nocard in the *Nouveau Dictionnaire pratique*, vol. xxi., 1892.

DISEASES OF CHILDREN

By J. S. FOWLER, M.D., F.R.C.P.Ed.,
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Juvenile General Paralysis (Hirschl, *Wiener Klin. Woch.*, No. 21, 1901).—Juvenile general paralysis is usually defined as general paralysis beginning before the twentieth year, but it is more correct to describe it as that which develops in a congenitally syphilitic individual, as opposed to that form which follows acquired syphilis. The paper is based on an experience of twenty cases which have occurred in Krafft-Ebing's clinic in the space of ten years. The two chief causes are congenital syphilis and the neuropathic diathesis. In one case no history of any kind was obtained, but of the other nineteen, seventeen were undoubtedly, and one probably, syphilitic, while in the other, though there was no history of syphilis, the patient's mother died of general paralysis. Twelve patients were males and eight females, and no less than nine were mentally defective—mostly imbeciles—before the disease developed. The time of onset was between the eighth and twentieth years, and in half the cases from the fourteenth to the sixteenth. In nine boys and four girls the disease began before puberty, and in these cases the sexual functions remained in abeyance. The initial symptoms of the malady are both physical and bodily, and as a rule the patients came under observation for congestive, headache and vomiting; somewhat less frequently an apoplectic or epileptic attack was the first thing observed. Transitory attacks of unconsciousness with loss of power of speech were not uncommon, such seizures paving the way for the characteristic defect of articulation. By this time, some of the following were usually also present:—absence of the pupillary reflex, ptosis, exaggeration of the knee-jerks, and (in two cases) optic atrophy.

Among other early symptoms, tremor, coarse arhythmic movements, or chorea were common. Mental deterioration set in simultaneously with these, the patients forgetting all they had already learned, the memory becoming impaired, and there being complete inability to take up any new pursuit. Bad temper, excitability, and loss of the natural affections were noticed. Though these symptoms may be said to characterise the early period of general paralysis, there is no definite first stage in juvenile cases, but the symptoms progress steadily till the malady is fully developed. The mental condition undergoes rapid deterioration, without remission, until complete dementia results. In no case was there maniacal or hypochondriacal delirum, but only simple dementia, hallucinations being rare. Somatic symptoms develop rapidly, the patients become emaciated, the speech becomes more and more affected until the sufferer is almost dumb or quite inarticulate, contractures appear, and spasmodic movements of the fingers and toes, unilateral tremor or chorea, and epileptic or paralytic seizures occur with increasing frequency. Ultimately the patient is completely bed-ridden from paralysis and contractures. The average duration of these cases was three years and nine months; two patients, however, lived for seven years. In two cases the disease was complicated by infantile paralysis, and in one by primary lateral sclerosis. Juvenile general paralysis, then, differs from the adult form in the following particulars:—(1) It is caused by congenital syphilis. (2) It frequently affects those who are already mentally deficient. (3) The initial stage has many somatic symptoms, and numerous epileptic and other seizures. (4) At the height of the malady there is simple dementia, not mania or melancholia; the disease progresses without remissions; irritative symptoms are common. (5) The duration of the disease is relatively long.

Hysterical Word-deafness. — Mann (*Berl. Klin. Woch.*, Feb. 2nd, 1901) records a case of hysterical word-deafness in a child aged seven. The aphasia developed after an outburst of passion, and for a month speech was indistinct, and then suddenly became quite unintelligible. The child was at first looked upon as deaf, because when spoken to she made no reply, but either stared blankly or shook her head, or, at most, uttered some unintelligible gibberish. The patient was found on examination to be quite intelligent, and was only deaf as regards spoken words. In addition to the sensory aphasia there was well marked paraphasia. Words spontaneously produced, or reproduced to command were mere gibberish, but the number of syllables was usually preserved—*e.g.* Anna was repeated as

Tu-Tu, Abraham as Etahi, etc. While consonants were all utterly wrong, the vowel sounds were, as a rule, produced correctly. The only words she retained were the names of her sisters, which she was able to repeat without difficulty. Writing to dictation was of course impossible, and it was difficult, on account of her youth, to test spontaneous writing, but she was able to write down correctly the names of familiar objects set before her, and could also copy. She could neither read, nor understand sentences read to her. The diagnosis lay between an organic lesion of the temporo-sphenoidal lobe, and a hitherto undescribed hysterical affection. The diagnosis of hysteria was based on the absence of any other cerebral symptoms which so large a lesion as would have caused word deafness and paraphasia ought also to have produced; on the relatively great degree of paraphasia; on the demeanour of the patient, who was not distressed by her speech defect, but seemed to enjoy the tests applied; and on the mode of onset after emotional disturbance. Energetic electrical treatment was begun, the lips being faradized daily for four months without effect. The patient was then isolated completely and deprived of her toys; cold douches and packs were given, and efforts were made to teach her to speak. For a fortnight all attempts were fruitless, but she gradually began to repeat words, and in eight weeks could utter words which she had not been taught. It was found that as soon as the child could repeat a word she could also understand it, the paraphasia and word deafness disappearing together. She recovered completely in about three months after being isolated. The case is, the author thinks, unique.

Infantile Atrophy. — Blacher has recently (*Jahrb. für Kinderheilk*, xxix. p. 368, 1900) made careful observations on the urine of marasmic infants. The patients selected were free from diarrhœa or fever, and simply showed progressive emaciation, with loss of power to digest and assimilate food, usually as the result of chronic gastric and intestinal disease. Blacher finds that the urine is diminished to a half or a quarter of the normal, the diminution corresponding with the loss of body weight. The specific gravity is always about 5 deg. below normal, and as the patient begins to gain in weight, it rises more quickly than does the total quantity of urine. If the urine is diminished more than half, and the specific gravity more than 8 deg., the prognosis of the case is bad. The urine is of pale colour, and has a strong odour; it is highly acid, from excess of urates. The nitrogen excretion shows that the tissues are deficient in oxidising power, the amount of urea being low, while the total nitrogen excretion remains high. The chlorides

are diminished, but the phosphoric acid is relatively increased. The writer thinks that his results go to support the idea that in athrepsia a degree of auto-intoxication is produced. The increased ratio of total nitrogen and uric acid nitrogen to the urea nitrogen point to defective oxidising power of the cells of the body, resulting in the retention in the blood of intermediate products of metabolism. He suggests the use of spermin to stimulate extra organic oxidation. Heubner (*Jahrb. f. Kinderheilk*, 1901, p. 35) criticises the results of previous observations on the pathology of infantile atrophy. Briefly, his position (which is supported by experimental evidence) is, that the change found in the intestines of atrophic children, and said to be characteristic of that condition, are artificially produced, and due to variations in the grade of distension of the intestine. The clinical fact that atrophy may be completely, and sometimes rapidly recovered from, is alone sufficient to prove that it cannot be due to serious organic changes in the intestine. He regards the disease as due to functional inactivity of the intestinal mucous membrane, resulting in insufficient utilisation of the food. The conclusions are:—(1) In many cases of true atrophy no change whatever can be found in the intestinal wall. (2) Such alterations as have been described as intestinal atrophy can be produced in the healthy bowel by distending it. (3) So-called intestinal atrophy has never been found in collapsed bowel, but always in distended parts.

Rheumatism in Childhood.—Still (*Practitioner*, January 1901) lays stress on the necessity of remembering that the joint symptoms are slight in childhood, and that rheumatism more frequently shows itself at this age by the occurrence of chorea or heart disease. At the very lowest estimate, 55 per cent. of a series of cases of chorea showed evidence of rheumatism. At King's College Hospital, where only children under ten are treated, out of 1000 consecutive patients, 229 were between six and ten years of age, and of these 13·1 per cent. showed evidence of rheumatism; while during 1897-98, 24·7 per cent of the patients between six and ten years admitted to Great Ormonde Street Hospital suffered from this disease. In these figures, only those cases which present positive signs of rheumatism (excluding chorea) are included; should chorea be proved to be a manifestation of rheumatism as nodules and heart disease are, the frequency of rheumatism would be greatly increased. It seems certain that (in London at least) the disease is more common between the sixth and twelfth years than in adolescence or adult life. During early childhood, however, it is very uncommon, and in infancy almost unknown. Still has not seen a

single case under two years, though he has had several at two and a half years. Pain in the limbs are more commonly muscular than articular, yet even when there is complaint of muscular pain only, an effusion may be present in one of the joints, which apparently gives rise to little inconvenience. Rheumatism not infrequently affects one hip-joint only, and remains localised for several days, so that tuberculosis may at first be suspected. "Pains at the back of the knee" is a not uncommon manifestation. Again, among the more easily overlooked early signs of rheumatism, stiff neck should not be forgotten. Common though endocarditis and pericarditis are, it appears that in children, to a greater extent than in adults, dilatation of the heart, with irregularity and rapid action may be the earliest or the only sign of cardiac affection. Cardiac rheumatism is often accompanied by wasting, which may be so severe as to mask the original malady. The practical importance of rheumatic nodules is great; though rare in the adult they are common in the child, being present in nearly one-third of the (severer) cases of rheumatism treated as in-patients. Their presence makes the prognosis grave, even in an otherwise favourable case, and when they are present, if endocarditis have not already developed, its onset is extremely probable, and the cardiac disease will likely progress steadily. Sore throat must not be forgotten as a symptom of rheumatism. The cutaneous manifestations are the same as in the adult, and Still does not think they are particularly frequent in children. Contrary to what we might expect, bearing in mind the nervous instability of the child, hyperpyrexia is extremely uncommon. Still has noticed that certain minor symptoms, though not usually described as rheumatic, have a very close connection with the disease. "Pain in the stomach," usually referred to the epigastrium, is one of these; it is probably of gastric origin, and does not always depend on the ingestion of food; it is usually associated with growing pains or articular rheumatism. Another is "pain in the side," usually in the lower part of the axilla, with nothing otherwise to suggest pleurisy, nor any cardiac lesion sufficient to account for it. It may be due to intercostal rheumatism. Headache is common—sometimes due to gastric catarrh or anæmia; sometimes probably to the direct action of the rheumatic poison. It is very frequently associated with chorea. One of the most striking features of rheumatism in childhood is its close connection with the neurotic diathesis. This is illustrated in the frequency with which night terrors occur in such patients; the same is true of day-terrors. Somnambulism and other disorders of sleep are also common. Habit spasm, too, appears to be specially frequent in the rheu-

matic; as a rule its restriction to a single movement serves to distinguish it, but when the movement is a complex one, the possibility of an unusually limited chorea must be borne in mind. Another ailment which is not uncommonly associated with rheumatism is lienteric diarrhœa. In another paper (*Path. Soc. Trans.*, vol. l. 1899, p. 324) Poynton and Still describe the **Histology of the Rheumatic Nodule.** The centre is composed of homogeneous layers of fibrin, and this, and not the subsequently developed fibrous material, is the essential constituent. As we approach the periphery, cellular elements appear, and further out still we come upon fibrous tissue with enlarged and tortuous vessels. Exactly similar changes are found in the valves of the heart, and in the pericardium we know that the series of changes is fibrinous exudation, cellular infiltration, and then fibrosis. Thus the rapid appearance and disappearance of nodules can be explained; if the rheumatic process be evanescent the fibrinous exudation is absorbed; while if it be more protracted, there will be more fibrosis and the nodules will persist longer. The structureless central substance is not a degeneration as has been supposed, but is the essential feature, while the formation of fibrous tissue is not invariable.

Infectious Diseases in Children's Hospitals.—The trouble and anxiety to which outbreaks of infectious disease—especially measles—occurring in the general wards of a children's hospital give rise will not be underrated by those who have had experience of them. As might be anticipated the mortality is much higher than among healthy children under similar conditions, and the difficulty and inconvenience arising from repeated closing and disinfection of a large ward are such that the methods adopted in some of the Paris Children's Hospitals seem worthy of further trial. Grancher (*Practitioner*, Dec. 1900) believes that it is possible to isolate a patient in a general ward, provided that strict antisepsis be observed, and direct contact between the infection and other cases be prevented. The dangerous aerial zone surrounding a case of measles is small, and the expired air is usually sterile. He thinks that antiseptic precautions are of prime importance, and that if these are faithfully observed, infection can usually be prevented, even if isolation be imperfect; without antiseptic precautions isolation alone is not effective. He advises the following precautions:—1. Suppression of dust. If old, the floor should be relaid with thoroughly parafined parquet. It should be washed twice daily with a cloth dipped in sublimate solution, 1 to 1000. The walls should be washed down twice a week. 2. Isolation. Every suspect is to be surrounded by light, movable, trelliswork

screens, about 4½ feet high; these cases will comprise (*a*) patients who develop catarrhal symptoms within fourteen days of admission to a previously healthy ward, and (*b*) cases of catarrh developing within fourteen days of the occurrence of a case of measles in the ward. 3. Disinfection. No nurse or doctor goes within one of the screens without putting on a loose cotton overall, which is kept hanging on the screen when not in use. Before leaving the screened off area the hands are washed with soap and water, and rinsed in sublimate lotion. All bed utensils, feeding cups, etc., should be plunged in lotion before being taken away from the cot. Bedding is disinfected by steam, and linen, etc., by boiling. In treating measles in infectious wards the same principle has been employed with benefit. Complicated cases are, as far as possible, isolated from each other, and from uncomplicated ones. By isolating measles with broncho-pneumonia from other cases, for example, the general mortality has been greatly reduced. It will be seen that the novelty of the proposals lies in the use of the screens, and one of their chief advantages apparently is that they prevent communication between suspected cases and convalescent patients who are playing about, and might act as carriers of infection, without necessitating the isolation of all suspects in separate wards.

Myotonia in Infants: its relation to Tetany (Hochsinger, *Wiener Med. Woch.*, 1900, No. 7).—The writer thinks that two quite distinct classes of cases are included under the head of infantile tetany. (1) A disease which usually develops between the fourth and twentieth months, and consists of painful, intermittent, tonic spasms of the muscles of the limbs. Such children usually also show facial irritability and Trousseau's symptoms; they are nearly always rickety, and often suffer from laryngismus and convulsions. The condition is most frequent towards the end of winter and in early spring. (2) A disease differing from this in all points save the existence of tonic spasm. This Hochsinger calls myotonia, and regards it as an exaggeration of the normal hypertonicity of muscle which is found in newly-born children. The chief feature of myotonia is a persistent, painless tonic contraction of the muscles of the limbs, especially of the flexors of the fingers and hands. Slight degrees are found in quite healthy children, and it is often increased by excitement. Pressure on the brachial plexus may set up, or increase this myotonia, and lead to the hand assuming the tetany position. The ease with which this may be produced in the earlier weeks of life is due to the absence of inhibition proceeding downwards from the cortex. He recog-

nises three grades of myotonia:—(1) Intermittent contraction of the muscles of the extremities, with tetany position, but without pain or increased electrical and mechanical irritability. This occurs chiefly in non-rachitic infants, and before the age of four months. It is usually associated with congenital syphilis or gastro-intestinal disorders. (2) Persistent spastic myotonia, a symmetrical spasm of the flexors of the hands and feet, and adductors of the limbs. This may continue for months, it is especially frequent in the first few weeks, and rarely begins after the third month. (3) Myotonia extending to the muscles of the trunk and neck, and even to those of the face; a condition resembling tetanus is produced, but without increased excitability of the muscles and nerves. Hochsinger believes that the severer forms of myotonia are due to change in the cells of the anterior horns of the cord.

Editorial Notes and News

Recent Changes on Edinburgh Hospital Staffs

DR P. H. M'LAREN having served his term of fifteen years as full Surgeon to the Infirmary, recently resigned the post and was appointed Consulting Surgeon.

Mr Cathcart becomes full Surgeon; Mr Caird, Senior Assistant, with charge of the wards specially set apart for women students; and Mr J. W. Dowden was appointed to the vacancy of Junior Assistant Surgeon. Dr George Chiene succeeds Mr Dowden as Assistant Surgeon to the Royal Hospital for Sick Children.

The School of Medicine of the Royal Colleges, Edinburgh.

AT a meeting of the Governing Board of the School of Medicine of the Royal Colleges, Edinburgh, the secretary, Mr R. N. Ramsay, reported that the number of students attending the school during the winter session 1900-1901 was 1160, and during the summer session 1901 the number was 1119.

Royal Colleges of Physicians and Surgeons of Edinburgh, and Faculty of Physicians and Surgeons of Glasgow

THE quarterly examinations of the above Board, held in Edinburgh, were concluded on 27th July, with the following results:—

First Examination, Five Years' Course.—Of thirty candidates entered, the following fourteen passed the examination:—Leopold Henry Gill, Gibraltar; George Augustus Stewart Hamilton, Ireland; James Murphy, Middleton; Jessie Jean Martin Morton, Edinburgh; Henry George Smith, Limerick; James Watson, Edinburgh; Ayodeji Oyejola, West Africa; Edith Boomgardt, India; Ernest Patrick Titterton, Stafford; George Henry Waugh, Belfast; Robert Murray Fraser, Edinburgh; Nicholas Daunt Sweetnam, Cork; William Primrose Walker, Edinburgh, and Charles Stewart Parnell M'Dermott, Cork; and five passed in physics, four passed in elementary biology, and one in chemistry.

Second Examination, Five Years' Course.—Of twenty-seven candidates entered, the following fourteen passed the examination:—Joseph van Someren Taylor, China (with distinction); William Herbert Boalth, India; Broderick Edward Middleton Newland, India (with distinction); Richard Henry Rigby, Lancashire; Debendranath Banerji, Bengal; Sybil Lonie Lewis, Chester; John Joseph Lawton, County Cork; Stephen M'Carthy, County Cork; Bessie Chapple, Australia; Eileen FitzGerald, Australia; Claude Ernest Watts, Dewsbury; Patrick Shaw, Victoria; Robert David Hirsch, Bombay, and William Ernest O'Hara, Victoria; and two passed in anatomy and one in physiology.

Second Examination, Four Years' Course.—Of eight candidates entered, the following six passed the examination:—Andrew Paterson Walker, Glasgow; William Francis Waugh, Cork; Urban Burston, Cheshire; Fergus Donald Yourelle, Dublin; John Charles Grant, Durham, and John Martin, Castleblayney.

Third Examination, Five Years' Course.—Of twenty-six candidates entered, the following sixteen passed the examination:—Adam Wilson Hall, Edinburgh; Thomas Albert Mendes, Calcutta; Leo Levi, Turkey; Charles Stuart Macaskie, Bamburgh; John Arthur Douglas, Kilkenny; William Pearson Cowper, Kirkwall; Thomas John Walsh, Kilkenny; William John Gray, Portobello; John Mulvihill Gerety, County Longford; George James Harman, Madras; Annjuta Kellgren-Cyriax, London; Alice Esther Gifford, Redhill; Peter Oswald Jollie, Leslie; Shavaksha Palanji Mistri, Bombay; Henry Carlaw, Aldershot, and John O'Connor, County Cork; and one passed in anatomy and one in materia medica.

Final Examination.—Of eighty-four candidates entered, the following forty-eight passed the examination and were admitted L.R.C.P.E., L.R.C.S.E. and L.F.P. & S.G.:—David Mitchell, Edinburgh; James Campbell Nicholson, County Down; Alfred

Augustus Beeks, British Honduras; Claude St Aubyn-Farrer, Middlesex; James Alexander Baird, Ontario; Frank Johnson Pattee, Ontario; Raoul Ferdinand de Boissiere, Trinidad; Neil Murphy Gavin, Stirling; Alice Marietta Marval, Bombay; John Bulman Mason, Dunbar; Alice Deborah Sibree, Madagascar; Alexander Wilson Frew, Denny; Bernard Flood, County Longford; Anthony Hagarty Corley, County Dublin; Harry Holden, Burnley; Norman Lang Stevenson, Edinburgh; Joseph Crawford, County Monaghan; Frederic William McCay, County Antrim; David Gregg Metheny, Pennsylvania; David Llewelyn Williams, North Wales (with Honours); Charles William Sharp, Comrie; Gopal Chunder Ghose, India; Michael Bernard Conroy, County Galway; Alice Evangeline Brown, Manchester; Jeanie Newton, India; Walter Goldsworthy Edwards, Gibraltar; Herbert Ernest Jardine Batty, India; Cecil Richard Martin, India; Augustus D'Souza, India; Jeysing Parbhudas Modi, India; Thomas Fryer Okell, Chester; Henry Edwin Blackwood, Kirkintilloch; Patrick William M'Hugh, Enniskillen; Gerald Spencer Coghlan, Stafford; Richard Fox, Notts; Behramji Barjorji Paymaster, Bombay; Jose Santanna da Piedade Rodrigues, Goa; Kaikhusroo Dossabhoy Cooper, Surat; Ebenezer Millicans, Cawnpore; Donald M'Neill Ford, India; Walter Sykes, Preston; James Harvey Stewart, Aberdeen; Hirjie Nowroji Anklesaria, India; Herbert Davis Pitt, Willenhall; Darabshaw Fardoonji Sanjana, Bombay; William Pennington Grellet, Hitchin; Helen Mary Serjeant, Huntingdonshire; and John Dunlop, Beith, and six passed in Medicine and Therapeutics, five in Midwifery and six in Medical Jurisprudence.

Royal College of Surgeons, Edinburgh

THE following gentlemen having passed the requisite examinations were, at a meeting of the College held on 30th July elected Ordinary Fellows: — George Alexander, M.B., Ch.B., Forfar; William Harold Graham Aspland, M.R.C.S.Eng., L.R.C.P.Lond., Labrador; Alexander Girvan, M.B., C.M., Edinburgh; Patrick Kinmont, M.B., Ch.B., Edinburgh; William Taylor M'Arthur, L.R.C.S.E., California; Angus Macdonald, M.B., C.M., Edinburgh; Stuart Allan Ord-Mackenzie, M.R.C.S. Eng., L.R.C.P.Lond., Reading; Arthur Davies Peill, M.B., C.M., North China; George Henry Pooley, L.S.A.Lond., Uganda; Matthew Alexander Reid, M.B., C.M., Edinburgh; Edward Robertson, L.R.C.S.E., Edinburgh; Frederic Herbert Sturdee, M.R.C.S.Eng., L.R.C.P.Lond., London N., and George Fourquemin Vincent, L.R.C.S.E., Transvaal.

University of Edinburgh—Faculty of Medicine

THE following is the official list of passes at the recent first, second, and third professional examinations :—

First Professional Examination.—Thomas Addis, D. C. Alexander, A. C. Alport, K. G. Archer, C. R. M. Baker, George Banks, George S. Banks, D. M. Barker (with distinction), G. G. Bartholomew, Douglas Bell, W. J. E. Bell, J. W. Bingham, Norman Black, D. P. Blair, R. A. Blake, Elizabeth H. Brooke, Herbert Brown, J. W. Cairns, J. S. Caldwell, Herbert Cargin, N. S. Carmichael, Marjorie Duake-Cohen, William Collins, B.A.; H. P. Cook, F. W. Cragg, J. A. Cruickshank, Irene B. Cunningham, Davidina R. J. Davidson, Thomas Davidson, L. F. Dawson, J. M. Dickson, N. C. Dutt, H. A. Edwards, C. E. Elliston, S. C. Fernando, R. S. Frew, F. H. S. Gardner, Jessie H. Gellatly, D. G. Gray, E. J. C. Groves, J. T. Gunn, George Haddon, J. R. Hall, D. G. Harries, W. M. Hewetson, J. R. Holgate, J. C. Holm, G. H. Howe, Joseph Ings, Annie Jackson, Solomon Kark, J. R Kerr, J. S. Kinross, Ethel Landon, James Lindsay, J. A. Loughridge, A. S. Macbeth, T. A. Macgibbon, B.Sc.; K. W. Mackenzie, Helen M. M'Millan, Stewart M'Naughton, W. J. Maloney (with distinction), S. E. Martin, E. S. Massiah, D. M. Mathieson, M.A.; Ada E. Miller, A. L. Miller, Aimee E. Mills, B.Sc.; O. M. Mirylees, D. L. Morrison, H. L. Morrow, Harold Mowat, R. E. Moyes, Anna M. Mulholland, E. B. Munro, R. R. Murray, R. E. U. Newman, A. J. R. O'Brien, A. A. Ollivierre, William Patton, D. H. Paul, J. L. Pearce, K. A. O. Quainoo, George Raffan, Mabel L. Ramsay, H. E. Rawlence, W. E. Reynolds, C. S. U. Rippon, H. D. Robb, T. E. Roberts, J. Z. H. Rousseau, W. M. Scott, W. J. B. Selkirk, M.A.; J. G. B. Shand, Alice C. Sharp, E. S. Simpson, I. Y. Smail, T. R. Smith, R. A. Spence, Alexander Stephen, M.A.; A. D. Stewart, W. J. Taggart, S. H. S. Taylor, B.A.; R. B. Thomson, Nettie B. Turnbull, A. P. Wall, D. R. P. Walther, J. D. Wells, H. M. Whittell, Richard Wilkins, H. C. Wilson, Marian E. Wilson, James Young.

Second Professional Examination.—R. T. G. Aickan, John Allan, G. W. Armstrong, Agnes Balfour, William Basson, John Brennan, Robert Buchanan, Samuel Burns, Harry Caird, T. P. Caverhill, D. Halliday Croom, F. D. Crosthwaite, Alice M. Ebden, H. N. Fletcher, F. H. Gibson, T. M. Guthrie, George Harrison, G. W. Harty, Isabel Hill, Janette T. Hill, T. J. H. Hofmeyr, F. E. Larkins, F. T. C. Linton, M.A.; C. D. Lochrane, J. M. Lovett, Alexander Lundie, Henry MacCormac, J. W. M'Ewan, N. D. M'Kay, William Mackenzie, H. C. Martin, A. G. M. Middleton, C. R. P. Mitchell, G. I.

Moriarty, Helen Morrison, Thomas Nicol, C. F. A. Oberlander, Labbhu Ram, Charles Reece, W. J. D. Robertson, W. S. Robertson, L. C. Robinson, J. A. Ross, F. G. Saleeby, William Sanderson, D. J. Scott, J. E. Scott, M.A.; W. M. Selby, W. H. Simpson, J. Henderson Smith, Effie Stuart, John Tait (with distinction), E. J. Taylor, T. T. Thomson, J. P. du Toit, E. A. Turpin, Caroline Twigge, R. M. Walker, J. H. D. Webster, Leonard West, R. M. Mainwaring White, W. C. P. White, W. Y. Woodburn, A. C. T. Woodward. *Old Regulations.*—F. R. Bremner, L. A. Drake, S. C. Roy.

Third Professional Examination.—Nina H. Beath, Constance A. Bennet, G. S. Blandy, J. G. Briggs, G. G. Buchanan, H. H. Bullmore, W. C. Burton, E. E. Cassaday, R. E. Collins, A. F. R. Condor, H. L. Cumming, Henry Curwen, A. R. Douglas, F. C. Drew, John Fairbairn (with distinction), Agnes J. Gardner, E. C. Gimson, R. G. Gordon, J. A. Gray, L. A. Holcroft, C. H. Houghton, John Hunter, Arthur Hutley, Bertha Jex-Blake, J. M. Johnstone, W. E. Knight, W. S. Laidlaw, Abraham Leach, A. B. Leakey, J. C. London, A. W. B. Loudon, J. G. M'Caughey, Alexander M'Ewan, Daniel Mackinnon, Evan Macmillan, J. B. Mason, E. L. Meynall, R. C. Monnington, E. J. Morton, Robert Murray, Charles Nelson, J. H. C. Orr, Harry Overy, A. C. Owen, D. E. S. Parke, John Politachi, E. C. Pritchard, A. F. H. Rabagliati, J. A. Raubenheimer, David Sandler, G. D. Sloan, M. W. Smart, Baba M. S. Sodhi, David Sutherland, A. B. M. Thomson, J. F. van de S. de Villiers. *Passed in Pathology.*—G. M. Brunton.

New Books and New Editions

A Text-Book of Gynecology. Edited by CHARLES A. L. REED, A.M., M.D., President of the American Medical Association (1900-1901), etc. Illustrated by R. J. HOPKINS. 950 pages 8vo, 355 illustrations. London: Henry Kimpton. 1900. Price 25s. net.

THIS text-book of Gynecology, although edited by an American and written largely by Americans, might yet be not unfairly described as Anglo-American, for in the list of those who have collaborated are the names of gynecologists residing in Edinburgh, Glasgow, Montreal, Leeds, and Manchester. In some respects the work has novel and not unpleasing features

The subjects are treated by writers specially qualified to deal with them, but this does not mean that each chapter is written by one man—some chapters indeed are the work of two or three or even four men—the separate contributions are cleverly welded together by the editor and a uniform smoothness and continuity is given to the whole. At the same time a reference to the table of contents will reveal at once exactly the parts for which each collaborator is responsible. In the same way the illustrations have been, as it were, edited, and worked over, and brought to the same scale and character; although some violence may in this manner have been done to certain of the individual plates, the general result is a pleasing uniformity and clearness. Another striking feature of this text-book is its perfect up-to-dateness: the reader will in vain look for a chapter on inflammation of the uterus, but he will find in its place a remarkably modern chapter on uterine infections in which he will discover the details of gonococcous, streptococcous, tuberculous, syphilitic, and echinococcous infection. Yet another novel feature of the work under review is the fact that some parts and more particularly those dealing with pathological, bacteriological and neurological matters are written not by gynecologists but by pathologists and dermatologists and neurologists.

An idea of the scope and interest of "Reed's Gynecology" will be obtained from the titles of some of the chapters. There is, for instance, a chapter on the general etiology of diseases of women in which the influence of civilisation, education, occupation, prevention of conception, criminal abortion, childbirth, and the social evil is carefully considered. Then there is one devoted to sepsis, and another to antisepsis, and another to shock. The chapter on anæsthesia which is mainly from the pen of Professor Amory Hare of Philadelphia, is very judicial and, we believe, very fair; there is no undue laudation of either chloroform or ether, but a careful contrast of the risks and advantages of both, and a useful paragraph upon the points which may determine our choice of one or other. The chapter dealing with abdominal section is good: we note that the operator wears gloves and that the closure of the incision is very fully and lucidly described in all its varieties ("laminated," "en masse," etc.). There is a chapter on Cæsarean section, a matter which one is accustomed to find in obstetrical rather than in gynecological text-books; but we think that the editor is justified in including it, for in the future at least there can be no doubt that opening the abdomen in midwifery practice will be more and more performed by the men who have experience in gynecology. Perimetritis and parametritis are to found in the article dealing with infections of the broad ligament and

pelvic peritoneum; and disorders of the female urinary apparatus and of the rectum are more fully discussed than in most gynecological text-books. Displacements of the uterus are retained in a place of honour, notwithstanding all that has been written of late years to prove that as such they produce no symptoms and require no treatment; in this respect the work is conservative, but there will be many who agree with the editor in so treating the question. There is a final chapter on pelvic diseases and nervous affections, from which we quote with approval the sentence "operate for surgical indications only." As a whole Reed and his collaborators may be congratulated on having given to the English-speaking medical public a thoroughly sound, scientific, and practical text-book of Gynecology; and the publishers have done their part well. There is a full index, correct so far as we have tested it.

Traité de l'Art des Accouchements. Par S. TARNIER et P. BUDIN. Tome Quatrième. Pp. xix., 754. Paris: G. Steinheil. 1901.

THE appearance of the fourth volume of the magnificent text-book of Obstetrics with which the name of the late Professor Tarnier is specially associated marks the completion of a great undertaking. The first volume was published so long ago as 1882, and was written by Tarnier in collaboration with Chantreuil; the second, which appeared in 1886, after the lamented death of Chantreuil, was the work of Tarnier and Budin; before, however, the third issued from the press, the great originator of the book had passed away, and the third and fourth volumes have been the result of the joint labours of Budin, Bonnaire, Bar, Tissier, Maygrier, Demelin and Brindeau. It is, therefore, almost twenty years since the work began to appear, and although Professor Tarnier has not lived to see its completion, his untimely decease has given the opportunity to his colleagues and pupils of finishing the work which he commenced and of thus raising a fitting memorial to his great qualities as an obstetrician. And it is truly a great work. The volume at present under review is one of the most, if not the most, interesting and practical, dealing as it does with obstetric operations, the accidents and difficulties of the third stage of labour and of the puerperium, and fœtal dystocia. Each chapter begins with a chronological bibliographical list and an alphabetical list of authors, and in some instances, as in the chapter upon forceps, these lists alone are almost worth the price of the

whole book. It will give some idea of the extent and thoroughness of the work if it be noted that over one hundred pages are devoted to the consideration of the forceps, and that the application of this instrument is dealt with not only in relation to vertex presentations, but also in face cases, to the after-coming head, after symphysiotomy, and for the extraction of the fœtus from the retracted uterus in Cæsarean sections. The volume closes with a well-written account of the infections of the new-born infant. There are views expressed in the work here and there which will not appeal with great force to English-speaking obstetricians; but this is an occurrence not to be prevented so long as obstetrics is practised to some extent differently in different countries. At the same time these differences are in Tarnier's work far from prominent, and in some respects its teaching is world-wide rather than strictly national. It is truly an epoch-making book, and it ought to find a place on the shelves of all obstetric teachers and of many general practitioners.

Transactions of the Sixth International Otological Congress, London 1899. President, Prof. Urban Pritchard. Edited under the direction of the editorial committee by E. CRESSWELL BABER, Hon. Secretary-General. London: The Southern Publishing Co. 1900. Price 7s. 6d.

THIS volume of 470 pages forms a valuable and permanent record of the work transacted at the Congress of Otologists of all nations, which was held in London in August 1899, and which lasted for nearly a week. In addition, it includes the text of no less than thirty-seven papers which had been intimated but which from want of time it was found impossible to read or discuss.

The interest of the meeting centred in the discussion on "The indication for opening the mastoid in chronic suppurative otitis media," which was opened by Professors Politzer and W. Macewen, and Drs Luc and Hermann Knapp. Other interesting papers, too numerous to mention individually, show how energetically the work of this special branch of Surgery is being carried on in the present day.

Dr Cresswell Baber and his committee have performed their editorial work in a most thorough and painstaking manner,

which calls for the gratitude and thanks of the members of the Congress, as well as of all who are interested in the subjects dealt with.

A Text-Book of Embryology for Students of Medicine. By JOHN CLEMENT HEISLER, M.D., Professor of Anatomy in the Medico-Chirurgical College, Philadelphia. Pp. 405, with 190 illustrations, 26 of them in colours. Philadelphia: W. B. Saunders. 1899.

THE present text-book of Embryology is an attempt, as the author states in his preface, to present a work "full enough to be intelligible, and yet without the minuteness of detail which characterises the larger treatises." It is quite true that text-books of Embryology, such as Minot's treatise, contain much detail, and are often very confusing and even unintelligible in consequence; at the same time it is a question whether such a state of affairs is not due to the condition of the subject rather than to the manner in which the writer has treated it. Our knowledge of many points in human Embryology is largely chaotic; to write clearly and concisely on such points might only mislead the student into thinking that the subject was easy and all its details well established. Nevertheless, Heisler's work is a commendable, and in part a satisfactory and successful attempt to simplify such portions of Embryology as are capable of simplification. There is a useful tabulated chronology of development at the end of the book, divided into weeks and months; this is good for reference. Most of the illustrations seem to be taken from other works on Embryology.

ATLAS AND EPITOME OF GYNECOLOGY. By Dr OSKAR SCHAEFFER. Privatdocent of Obstetrics and Gynecology in the University of Heidelberg. Authorised Translation from the second revised and enlarged German Edition. Edited by RICHARD C. NORRIS, A.M., M.D. Pp. 272, with 207 coloured illustrations on 90 plates, and 62 illustrations in the text. Philadelphia: W. B. Saunders & Co. 1900.

SCHAEFFER divides gynecological complaints into five groups: (1) Anomalies of formation and arrested development; (2)

Changes of shape and position; (3) Inflammatory and nutritional disturbances; (4) Injuries and their consequences; and (5) New growths. Each of these groups in the Atlas under review is fully considered and profusely illustrated. As a matter of fact the illustrations are *the* feature of the work; the letterpress, although quite sufficient, being rather of the nature of a commentary upon the plates. Some of the coloured plates are very good, the colours of the organs and structures being faithfully reproduced; others are simply diagrams in colour. Both varieties, however, serve a useful purpose. The translation seems to be well done, and the book deserves to be made widely accessible to English-speaking Gynecologists.

Difficult Labour: a Guide to its Management for Students and Practitioners. By G. ERNEST HERMAN, M.B. Lond., F.R.C.P., Senior Obstetric Physician to the London Hospital, etc. New and revised edition (2nd). Pp. 449, with 165 illustrations. Cassell and Co., Ltd. 1901. Price 12s. 6d.

THE first edition of this book was one of the most compact and convenient books which the practitioner could consult, and the revision necessary to bring it up to date, especially in the details of Cæsarean Section and Symphysiotomy has only enhanced its value. The author still occupies the same position with regard to Traction-rod Forceps, that they are of no advantage when the head is not above the brim, and that if it is, turning is usually better. The change of his illustration of forceps from Galabins to Daubers in the search for a rigid forceps that will give axis traction is perhaps the best comment that could be made on this dogma. "G. P."

NOTICE.

All communications to the Editorial Department, including Exchanges and Books for Review, should be addressed to THE EDITOR, Dr W. RUSSELL, 3 *Walker Street, Edinburgh, and all business communications, including Subscriptions, Advertisements, &c., to* THE SUB-EDITOR, Dr NORMAN WALKER, 7 *Manor Place, Edinburgh.*

THE SCOTTISH
MEDICAL AND SURGICAL
JOURNAL

THE MANAGEMENT OF THE THIRD STAGE OF LABOUR

Communicated to the Edinburgh Obstetrical Society

By A. R. SIMPSON, M.D., F.R.C.P.Ed.,
Professor of Midwifery and the Diseases of Women and Children in the University of Edinburgh

CAPURON,[1] closing his description of the phenomena of labour, in which he had noted the brief calm that succeeds the rupture of the membranes ere the second stage sets in, says that after the head is crowned at the vulva, "the uterus makes a final effort; the pain is intense; the frenum tears; the woman utters a piercing cry, raises the hips and shoots out of the vulva successively the head, the shoulders and the trunk of the infant. This moment, the most painful of the travail, is followed by a calm much longer and more complete than the former; the woman has only a sense of delight or an unspeakable pleasure —that of being a mother. The natural expulsion of the after-birth, which takes place some time after, scarcely disturbs this state, and that of the lochia is still less painful."

But whilst the patient is enjoying this rest and revelling in the joys of motherhood, the medical attendant is very conscious that her troubles and his cares are not yet at an end. And it is not without good ground that Ahlfeld[2] says, "The last stage of labour is just that on whose course the life and health of the woman chiefly depend." So, when he has to take up the subject of the treatment of the third stage, Capuron has to expend many pages in showing how the deliverance and its dangers are to be conducted and controlled. Such are the

[1] "Cours theorique et pratique d'accouchemens," p. 212, 1816.
[2] "Berichte und Arbeiten," 1883, p. 83.

considerations which led the Council to propose as the subject of our discussion to-day—The Management of the Third Stage of Labour.

Engelmann and others who have interested themselves in the obstetrics of the uncultured races tell us of the difficulties that are sometimes encountered among them in connection with this stage of labour, and how the attendants try to overcome them and effect the delivery of the placenta by pulling the cord, sitting on the patient, kneading the uterus and administering drugs supposed to be efficacious in favouring its extension. Again, when we turn to the oldest medical literature[1] we find in the Hippocratic writings instruction given for the administration of sternutatories, emetics and stimulants of various sorts, to favour the extrusion of the placenta. When these measures fail, they hesitate to divide the cord and make use of the weight of the child to strain on the placenta, or suspend a weight to the cord if it has been torn across. They note cases, however, where the placenta had to be left *in utero* to be expelled in a decomposed condition after seven or eight days had elapsed. Celsus gives instruction to pull with the left hand gently on the cord whilst the fingers of the right pass up to the placenta to loosen its vessels and pull it out. Soranus recommends gentle tractions on the cord, and where this fails, introduction of the hand into the uterus to loosen and extract it. Where the orifice is closed, injections and fumigations may be used and a great variety of medicines administered, or eventually the placenta may be left to be expelled spontaneously by decomposition. So on through the dark ages; and when we come to the first text-book on Midwifery by Rösslin, we find him saying, according to the translation by Baynalde in his "Byrthe of Mankynde," 2nd book, 5th chapter:—

"And if it be so that any part of the secondine do appear let the midwife receive it tenderly, loosing it out easily and softly lest it break; then let the midwife tie that part of it which she hath handfast to the woman's leg or foot, not very straight lest it break, neither very lax lest it slip in again, and then cause her to sneeze. But, now, if the secondine tarry or stick so that it come not quickly forward, then loose it a little and a

[1] See Ploss, "Das Weib in der Natur und Völkerkunde," IVte Auflage von Bartels, 1895, vol. ii. p. 210.

little, very tenderly, wreathing it from side to side, till such time as it be gotten out, but ever beware of violent and hasty moving of it lest that, with the second birth, she remove the matrix also."

The famous French midwife, Louise Bourgeois, gives instructions which are reproduced in the English translation, "The Compleat Midwife" (section iv. chap. vii.), in these terms :—

"The child being drawn forth in safety, the midwife must now apply herself to the drawing out of the secundines, which must be done by wagging and stirring them up and down, and then gently drawing them forth, causing the woman to take salt in both her hands, and to shut them close, and then to blow in them, whereby you shall know whether they be broken or no. It may be done also by causing her to put one finger in her mouth, to provoke a desire of vomiting, or else by stirring, as when she is doing the ordinary needs of nature, or as nature itself constrained her to do, before the head of the child was come forth. All this must be done speedily; yet if this be not sufficient, she may take the yolk of an egg raw, or she may take a small draught of raw elder-water, or you may cause her to smell to a piece of assa fœtida. If she be troubled with wind cholicks, or have taken cold, which oftentimes doth breed wind, which is a great hindrance to the coming forth of the secundines, the midwife ought to chafe the woman's belly with her hand, which does not only break the wind, but causes the secundines to come down. If this fails, the midwife may with her hand dilate the exterior orifice of the womb, drawing it forth gently and by degrees."

On the whole the tendency was towards an expectant treatment of the retained placenta until the masters of obstetrics in the seventeenth century, noting the dangers of delay, began to practice and to advocate more active interference. The systematic intervention for immediate delivery of the placenta was especially insisted on by Deventer,[1] who describes his practice, and defends it in these terms :—

"Omitting all other endeavours, let the hand presently after the birth of the infant be passed into the womb; and if anyone asks Why presently I answer him :—

"1. If presently after the birth of the infant I pass my hand into the womb, it slips in easily, nay, and the arm if there be

[1] "Midwifery," chap. xxviii.

occasion without any trouble; for the head of the infant hath opened it sufficiently. On the contrary, whilst all those tricks are tried which authors mention, the mouth of the womb is so closely shut up that you cannot penetrate it without a great deal of trouble.

"2. After the birth of the infant you may pass your hand into the womb without any pain or inconvenience to the woman, which if delayed is not done without a great deal of inconvenience, because she cannot bear the relaxation of the mouth of the womb without a great deal of trouble.

"3. After the birth of the infant, the mouth of the womb is not only open enough, but the womb itself, which otherwise gradually contracts and grows less, closely binding up the secundine in itself, so that that which before was smooth and broad, and adhered to the bottom of the womb like a cake, is then long and small, as if you squeezed a cap together in your hand, or tied a purse, so that afterwards it is harder to reach the bottom, which happens not if your hand is presently passed in.

"4. If the hand is put up presently after the birth, there is no danger by drawing the navel string of drawing down the bottom of the womb, and inverting it, which too often is occasioned by unwary midwives, who through their ignorance persuade themselves that another infant is coming forth, thinking that the bottom of the womb is a head.

"5. If my hand is presently after the birth put into the womb, it assures me whether the after-birth adheres to the womb or not, which if I find loose, I presently draw out my hand, holding it betwixt my thumb and the rest of the fingers of my right hand, whlist I gradually draw the navel string with my left, by which method it is thrust out without any trouble to the person.

"6. If the hand is presently put up into the womb, I soon perfect the birth, for it is certain I can sooner extract the after-birth than another who draws it out or tries other ways; for I do not spend time in trying this or that method, but proceed in that which is the shortest and most certain.

"7. This method of drawing it out presently satisfies me whether one or more infants are to be brought forth, or whether a mole or a dead infant remains behind, all which I can bring out before or after the secundines, as there is occasion.

"8. By this means, besides bringing away the secundines, I can presently do that in the womb which I commonly used to do after the birth, therefore because I think it safe and useful to put in the hand sooner or later, I think it most advisable to do it presently after the birth."

The obstetric world was for a time disposed to follow Deventer's example. But it began to be seen that whilst this kind of interference in the hands of a master might be carried out with safety, it was attended in the hands of the general practitioner too often with disastrous consequences, and during the eighteenth century there were prolonged controversies as to the proper period for active intervention during the third stage of labour. Deventer's countryman Ruysch, who thought he had discovered a muscle in the fundus uteri whose special function it was to extrude the placenta after the child was born, would not have his muscle interfered with, and maintained that the placenta should never be removed artificially because of the danger of prolapse and inversion of the uterus. In our own country William Hunter took a prominent part in the reaction against early and artificial delivery; and the expectant treatment is advocated in 1767 in these terms by Dr John Harvie, a London teacher of midwifery, whom Wallace Johnson calls Smellie's successor :—

"My pupils, who deliver many poor women, according to my instructions, have of late left the delivery of the placenta to nature. In general it comes away soon; but if, after waiting an hour, there is no unusual discharge, they order the woman to be put carefully to bed, and then leave her. In such cases, I have not known of any placenta that has remained longer than nineteen hours; and all the women thus treated have recovered to great advantage. Is it not, therefore, reasonable to believe that nature would complete this part of her work with safety, as often, if not oftener, than she does the delivery of the child? Would it not then be the most rational and judicious practice? Undoubtedly. And every judicious and experienced practitioner will in time be convinced that there is but one objection to it, viz., its novelty. Women have not been long and generally used to it; for which reason they will be afraid of it; and, if any case should turn out disagreeably, they and their friends will exclaim against it. This prejudice, I am convinced, is now all that we have to combat with. Long imbibed prepossessions render this extremely difficult; as women, if the smallest portion of the placenta, or its membranes, be left in the uterus, have been used to think themselves in the same danger as if no part of them had been delivered. However, it frequently happens that a part, and sometimes the whole of the membranes, are torn off, and left behind, even in cases where the cake is

delivered by nature alone; yet I never saw any bad consequences from these incidents.

"In the following manner, nature may be greatly assisted; and without any addition of pain. After the child is delivered, the navel-string tied, and the child given to the nurse's care, take the navel-string in your left hand, gently pull down its loose part till you feel that it is a little tightened, and by it guide the forefinger of your right hand; thus you will commonly feel that a part of the placenta is fallen into the os uteri, and often that portion of it into which the navel-string is inserted. In either case, by gently pressing the finger against the part felt, and continuing the pressure in the direction of the axis of the pelvis, that is, downwards or backwards, it will presently fall out of the uterus; and then it may be easily slipped out of the vagina by the same finger. From the largeness, thickness and figure of the placenta, or from its coming into the os tincæ in a double manner, it would now and then stick for a long time in that situation, unless assisted in the way I have recommended. When it falls down in this manner it will likewise be particularly necessary to insinuate the point of the finger so as to get it above the edge of the placenta, and thus hooking it down to reduce it to a lesser bulk. Sometimes the edge of the placenta may be easiest come at by passing the finger up underneath the ossa pubis, at other times by passing the finger backwards, or towards the sacrum. There is another safe method of assisting nature in the delivery of the placenta, and which, for these five or six years last past I have found to answer generally very well in practice. As soon as the child is committed to the care of the nurse let the accoucheur apply his hand upon the belly of the woman, which is then very loose, and he will readily feel the contracting uterus; then having placed the flat of the hand over it, let him by a light or gentle pressure bring it downwards, or towards the pubes, and he will feel the uterus sensibly contracting, and often will feel it so reduced in size as to be certain that the placenta is expelled. By this method we will seldom have anything to do afterwards, but to help it through the os externum, if even so much remains undone. After the placenta is thus delivered it may be advisable to apply the hand, as before, upon the belly; and if the uterus is found to be too large, the pressure, cautiously repeated, will expel the greatest part of the coagula, which produced this increase of bulk. Thus nature herself, or assisted in one or other of these two methods, will not near so often as once in a hundred times fail in doing this part of her business; and even in that one case, of so great a number, were she left entirely to herself, it is more than probable that, in the end, her work

would be safely accomplished. By this treatment many women would be saved who now lose their lives, from the placenta's being forced away by the introduction of the hand.

"When the placenta is delivered by nature alone, or with that sort of assistance which we have recommended, in general it comes away inverted; that is, the side which was in contact with the child comes first, and the side which adhered to the uterus is covered by the membranes; thus the lobular side is rendered smooth, and, of course, slips away with ease, and perfectly whole. If the placenta be separated with force, and brought away by the hand, the reverse takes place; that is, the lobular side comes away first; which is thence liable to be torn, and some part of it even to be left behind.

"It is generally recommended to the practitioner in midwifery to show the placenta before he goes away to some of the females present. This must, no doubt, give satisfaction. But it is not my business to teach what good sense or common discretion and prudence will tell every practitioner."

In 1769 Dr Wallace Johnston says in his "Midwifery," p. 200:—

"The patient must be directed to compress her abdomen with both her hands, as equally as she can, descending from the epigastric to the umbilical region. When this pressure has been made about ten minutes she may fetch a deep breath, retain it, and force down while the operator assists as follows." The directions for the operator are to pull on the funis for half a minute at a time at intervals of three or four minutes; "and when this has been repeated," he says, "once or twice, the compressure on the abdomen must be made lower; as, for instance, more directly on the hypogastric region; by which means the placenta will generally come forth in about ten or fifteen minutes from the birth of the child, unless its adhesion be very firm; if it is, the uterus may be felt bulky towards the umbilical region; and therefore one hand of the operator must be applied now, instead of the patient's, on the outside of the abdomen, to make as equal a compressure upon the uterus as he can, and to bring its fundus down at the same time towards the pubes, whilst the funis is tightened below with the other hand. By this means the expulsive power of the uterus is commonly so much assisted as to make the placenta descend into the pelvis, and then advance through the vagina, especially when it comes obliquely, or with one edge foremost." He adds in a note that he had used this method for some time, and had "the pleasure to find the propriety of it confirmed by the practice of Dr Hunter and

Dr Harvie, the latter of whom appears to have been the first who recommended it in his lectures."

Later on (p. 204), in treating of cases that had called for artificial removal of the placenta with the hand *in utero*, he acknowledges: "Had I sooner known the method of assisting by compressing the abdomen I might probably have succeeded in some of these cases without introducing the hand."

In 1772, Charles White of Manchester wrote that when a pain comes on after the birth of a child:—

"The secundines will be easily extracted by gently pulling the navel-string, and here an easy pressure upon the abdomen by assisting the uterus to contract, will be of service. If the placenta be very large, a finger may be introduced to bring down the edge of it as soon as it is within reach. . . . I can with satisfaction declare that in the years during which I have proceeded in this manner, I have never had occasion for the manual extraction of the placenta. I have never left my patient till it came away, nor have I ever been detained a single hour by it." He warns against the dangers of a purely expectant treatment, and gives some illustrative cases, such as this: "An ingenious surgeon told me he delivered a strong, healthy country woman of a fine child as she sat on the knee of an assistant. He made no attempt to bring away the placenta, having been instructed by a teacher of midwifery that leaving it behind was never productive of disagreeable consequences. After waiting a considerable time for its exclusion, no bad symptoms appearing, he left her as he thought in perfect safety: but in the middle of the night she began to flood extremely, and he was again sent for. He made what haste he could, but living several miles from his patient, he came too late. She was dead, and the placenta unexcluded."

In 1783, Dr Dease of Dublin in his *Observations on Midwifery and the Disorders of Women and Children* said:—

"After the child is delivered and the woman somewhat rested, our attention will naturally be directed to the delivery of the placenta; for this purpose it will be proper to examine the volume the uterus makes above the pubis; if the uterus descends and forms [as it were] a hard round globe, it is a just criterion of its contraction, which will gradually detach the placenta, which after some time will drop into the vagina, and with some gentle efforts of the woman be gradually expelled. This operation of nature for obvious reasons is generally sooner effected after a slow labour than a quick one. We should never

in general attempt delivering the placenta until by feeling over the pubis, we find the uterus in a round hard state of contraction, that the woman has some pains, and that we find some part of it engaged in the os uteri so that it has been detached, and all we have to do is to favour its expulsion. Should the detachment of the placenta not be effected in the usual time, it will be much facilitated by the operator's judiciously applying his hand to the region of the uterus, which he may excite to the necessary contraction by gentle friction, and by introducing two or three fingers between the os uteri and the placenta, at the same time gently drawing and inclining the umbilical cord towards the sacrum; when it has descended into the vagina, care should be taken not to leave the membranes behind; this with a little caution is easily effected by twisting the placenta gently during its extraction."

In the latter half of the eighteenth century different lines of practice were thus pursued and advocated by different practitioners and teachers, so that as one of my predecessors, Prof. James Hamilton,[1] points out, two famous London obstetricians, who were for many years joint-lecturers, enunciated diverse views as to the treatment of the placental stage; for whilst Osborne expressly says, 'Under no circumstances whatever ought the placenta to be permitted to remain in the uterus for any considerable length of time after the birth of the child,' his respected colleague, Denman, says, 'If the placenta be not expelled at end of four hours from the birth of the child, it is generally wise to determine upon extracting it: and the determination of choosing that time is, I believe, to be founded on the opinion that the parts have not closed since expulsion of child. I can, however, recollect many examples of a retained placenta without a hæmorrhage, to which I have been called at any time within twelve or even twenty four-hours after birth of child, in which the placenta has been very easily managed, when the exigencies of any case required it.'

The war that was waged in the eighteenth century between the advocates of the active management of the Third Stage and the advocates of the expectant line of treatment was repeated under new conditions in the nineteenth. Professor Crédé, aware of the dangers incurred by delay in the emptying of the uterus, and taking note of the still greater dangers

[1] "Practical Observations in Midwifery," 1840, p. 161.

attendant on the forcible extraction of the placenta, whether by pulling on the cord or pressing the hand into the cavities to lay hold of the placenta itself, began in his *Klinische Vorträge ueber Geburtshilfe* in 1853 to advocate the treatment of the Third Stage by procuring the expulsion of the placenta by means of pressure on the uterus from above. At the meeting of the Naturforscherversammlung in Königsberg in 1860 he brought the results of his observations and experience so effectively before his fellow-countrymen that his practice was speedily adopted in almost all the obstetrical clinics and schools in Germany. The Crédé practice requires the application of the left hand of the accoucheur to the fundus uteri immediately after the birth of the child, to ascertain that contraction and retraction are in progress. When he has satisfied himself on this point, he occupies some time in the deligation and division of the umbilical cord, and then applies his hand more continuously to supervise, and when necessary to enforce the uterine activity. In normal conditions the uterus acts with sufficient vigour to separate the placenta from its surface and expel it from its cavity in a few pains, when the practitioner through the medium of the contracted and emptied uterus may squeeze the placenta out of the vagina and through the pudendal orifice.

Perhaps Crédé himself erred in having recourse to too early and too frequent interference with the natural efforts, and certainly in the hands of his followers the method was seen to be attended with some of the dangers which had discredited the time-honoured method of extractive interference. Sometimes portions of the placenta were left *in utero*: more frequently the placenta was expelled entire, but leaving behind it larger or smaller sheets of the membranes. The uterus is said to have been inverted, and it has been maintained that a greater loss of blood took place under this mode of treatment than in cases where the process was left entirely to the natural efforts. So it came about that in the seventies Dohrn, Freund, and especially Ahlfeld, began to lift up their voices against all active interference in the Third Stage, and to advocate the leaving of the extrusion of the placenta to the natural efforts of the parturient powers.

The controversy, as became the more scientific character of

the time, was attended with closer observation of the mechanism of the separation and extrusion of the placenta. It was recognised that as the secundines escaped from the *vulva* they were usually inverted, so that the amniotic surface of the placenta first appears with the cord attached to it, and the uterine surface, with more or less blood adherent, is covered with the inverted membranes. Schultze, in his famous wall-plates, has represented the after-birth as escaping from the *uterine cavity* in the same fashion, with an abundant effusion of blood or retroplacental hæmatoma in the inverted decidual sac. This method of extrusion of the placenta through the os uteri—"Schultze expulsion"—may take place in special cases of fundal or nearly fundal insertion of the placenta; but in general the placenta is folded back on its amniotic surface, and escapes with its lower margin, or a part near the lower margin coming first through the os, as was pointed out by Lemser, and confirmed and figured by Duncan—"Duncan expulsion." The lower down on the uterine wall the implantation of the placenta, the nearer will its first presenting part be to the lower margin; the higher up the greater will be the tendency to inversion of the placenta and membranes as they travel through the lower uterine segment and cervix.

There is pretty general agreement as to the mode of *expulsion* of the placenta: the mechanism of its *separation*, however, is still matter of controversy. This has been studied on frozen sections, on uteri removed in Porro's operation, and by introduction of the hand into the uterus after the birth of the child as well as by application of the hand to the uterus through the abdominal walls. Ahlfeld, finding in a Porro uterus that detachment seemed to have begun in the centre of the placenta, holds that the separation normally begins there and is completed as the result of an effusion of blood between the uterus and the placenta giving purchase for the further contractions of the uterus. But blood extravasation is no necessary element in the mechanism of placental detachment. In many cases the separation occurs in the absence of any retro-placental hæmorrhage whatever. Fluid blood is no stimulant to uterine contraction: its presence in the cavity seems rather occasionally to favour as well as to result from uterine inaction.

We must find in the direct action of the uterus on the placenta the cause of the separation. Dr Hart has maintained with great ingenuity and vigour the idea that the separation results from an expansion which occurs in the uterine wall after each contraction and which the placenta is unable to follow and so is shed. Dr Slight has recently suggested that the uterine wall is passive at the placental site and becomes stretched during the uterine systole to such a degree that the placenta separates from its surface. But I believe that Dr Barbour has more correctly given expression to the method in which the uterus effects the separation and extrusion of the placenta from its interior when he says:[1] "That the placental site can shrink to an absolute area of 14 or 21 square inches without separation, and that this may be either rather less or rather more than one-half of its area before labour had begun, are anatomical facts, but not nearly so significant as the following one—that with this amount of retraction the uterine wall embraces the placenta all round. In other words, the placenta has not become separated before the uterus begins to act on it *as a whole*. When this has taken place, the operating force is no longer retraction of the site alone, but retraction of the walls throughout: the uterus of the Third Stage now acts on the placental mass; and there is no uterine cavity in the sense of an empty space into which the placenta can arch itself, for the uterus grips the placenta on all sides."

Now, as regards the management of the Third Stage, Ahlfeld and others would have us follow a purely expectant treatment, and abstain from any interference in ordinary circumstances. Ahlfeld has rendered most important and valuable service in indicating the propriety of inspecting the whole genital canal to ascertain possible sources of hæmorrhage other than that resulting from the necessary laceration of utero-placental vessels, and in discussing the best methods of dealing with such hæmorrhages; and still more in demonstrating that the placenta may be left for lengthened periods, as Dr John Harvie had declared a century before, without endangering the patient's comfort or her life. According to this method, when the practitioner has satisfied himself that there is no undue hæmorrhage from the uterus and that he

[1] "The Anatomy of Labour and its Clinical Bearing," 1899, p. 99.

has used the proper methods for controlling hæmorrhages from other sources, he simply sees to it that the patient is cleansed and made comfortable with a carbolised dressing applied to the pudenda, and that the umbilical cord, compressed with a pincer close to the vulva, is laid on the patient's left thigh. A nurse from time to time looks at the dressing, and judges from the lengthening of the cord between pincer and vulva of the descent of the placenta, until she judges—usually in one and a half or two hours—that the after-birth is ready to escape from the vulva. A bed-pan placed below the patient then receives the secundines that escape by a straining effort of the patient, assisted if need be by pressure on the pelvic organs from above the pubes. But whilst such a line of treatment may be safely and conveniently carried out in a Maternity Hospital, it will hardly commend itself to the every-day practice of the medical practitioner, who knows that he can promote progress to the patient's immediate relief without interference with natural forces or the introduction of any element of danger, and who knows, further, that so long as the placenta is *in utero*, there is the risk of hæmorrhage, and that its extrusion or extraction becomes more difficult with the lapse of time.

We may say, in general, that when an hour has passed after the birth of the child with the placenta undelivered, it is time for active intervention. There can be no definite time limit set, however. Each case must be dealt with according to emergent conditions; and whilst in some instances the attendant may patiently wait on for two hours and more, in others he is justified, and sometimes compelled, to interfere, it may be, only after the lapse of ten or fifteen minutes. If the second routine ligature on the umbilical cord be applied to it close to the vulva, he can see by the lengthening of the cord that the placenta is descending, whilst the hand applied to the body of the uterus recognises that it is disembarrassing itself of its contents. When he finds that the uterus has emptied itself and become retracted and firm, he can use it as the medium by which, through the abdominal walls, he presses on the secundines that are now lying loose in the vagina and effects their complete expulsion through the vulva. If he now examines the placenta and membranes, and satisfies him-

self that they are entire, as is usually the case, within half an hour of the birth of the child, the woman patient is tidied, bandaged, and put to rest. The sanitary pad or diaper that has been applied to the pudenda is looked at once or twice during the next half-hour, and when there is no undue oozing, and he finds the uterus retracted, he leaves at the end of the hour with an easy mind.

If there be undue placental hæmorrhage it will be dangerous to wait for the spontaneous separation and expulsion of the placenta. On the other hand, where more than the usual length of time is passing without placental detachment, the practitioner has to bethink himself of the possible causes of delay. There are four main sources of difficulty, in two of which the powers are at fault and in two the passenger. The parturient Power—the uterine muscle—may be ineffective, *first*, from total inertia, whether this be due to the labour having been too protracted in the earlier stages, or too hurried in the second stage; or *second*, from irregular so-called "hour-glass" contraction, when the muscle over the placental area is inert whilst in the rest of the uterine wall it is active. The Passenger — the placenta and membranes — may, *first*, be morbidly adherent; or *second*, the placenta may have unfavourable attachment either as regards its extent or its site on the uterine wall. There may be a combination of these faults in some cases, as when the placenta is morbidly adherent in some of its lobes to a flaccid uterus, or when a placenta is found spread over an unusual area in a thinned membraneous state and at the same time morbidly adherent.

So long as the placenta remains *in utero*, whatever may be the cause, the medical attendant could not leave his patient with a perfectly easy mind. For he knows that though as yet there has been no placental hæmorrhage, hæmorrhage is almost certain to arise when the detachment begins; and if he be not at hand to deal with the condition, such disastrous consequences may follow as in the cases recorded by Charles White ere he can come to the rescue. In all the cases of urgency or of undue delay, whilst some aid will be obtained by the administration of ergot or its derivatives, by the use of hot douches, or even application of the infant to the breasts, no measure will give such sure and satisfactory results as the

application of the hand to the uterus to stimulate by massage, to feel contraction, and when the contractile hardening is recognised to add to the uterine force by firm compression, perhaps with both hands grasping the uterus over the fundus and anterior and posterior walls, so as to procure the separation and expulsion of the placenta.

When Crédé advocated this measure of dealing with the placenta in all cases of labour, he expressed the too sanguine expectation that if the practice came into general use the spectre of adherent placenta would be scared away from the domain of midwifery. Too sanguine, because there are cases, especially those where the placenta is badly implanted over an extended surface, when uterine action, however enforced, cannot bring about the separation, and when this can only be accomplished by the hand introduced into the uterine cavity. Still, abundant experience has shown that in demonstrating the wide applicability of separation and extrusion of the placenta by external manipulation, Crédé made a very notable contribution to the resources of the practitioner of midwifery. His method was first brought definitely under the notice of obstetrical Britain in a paper which I read to this society in 1863. In the following year a communication on the subject was made to the London Obstetrical Society by Dr Eastlake, who made free use of the facts and authorities I had already published. M'Clintock, editing the works of Smellie in 1876 (p. 236), condemns traction of the cord, and commends as "a far safer and more efficacious way of getting off the placenta that which has been practised from time immemorial at the Dublin Lying-in Hospital. It consists in pressing and squeezing off the after-birth by external compression of the uterus with the hand." Founding on the passage I have already quoted from Dease, and referring to a passage in Hardy & M'Clintock's "Practical Observations on Midwifery," he claims for this manner of dealing with the Third Stage the designation of the "Dublin method." The paragraph (p. 22) is headed "Hæmorrhage between the birth of the child and the expulsion of the placenta," and reads, "Different causes, some the result of bad management, and others of an unavoidable nature, may give rise to hæmorrhage at this period. It is unnecessary to enter into an enumeration of these, as they are sufficiently well

known; but, from whatever cause arising, the principles of treatment have been always the same, namely, to bring about the contraction of the uterus, and, if the means adopted for this purpose failed in checking the flow of blood, to remove the placenta. In every case of hæmorrhage prior to the coming away of the placenta, the first object has been to grasp the uterus with the hand (or get a competent assistant to do so), and next to ascertain by careful examination whether the insertion of the cord was within reach or not, 'as this will materially affect the danger of the case. . . . Having placed the hand on the fundus uteri, friction and slight pressure are to be made, and if the amount of contraction thereby induced be not sufficient to repress the hæmorrhage, it will be necessary to expel the placenta from the cavity of the uterus. In doing this the organ must be grasped firmly, and pressure exerted upon it in the axis of the brim of the pelvis. If the uterus have fallen to the left side, as not uncommonly happens, it must be raised into its natural position before commencing to exert compression upon it. It will also tend much to the success of the manipulation if it be performed during the presence of uterine action; indeed, we have sometimes been surprised at the ease with which the placenta was pressed off during a contraction of the uterus, where previously it had withstood our best-directed efforts. These measures we have seldom found to fail in getting away the placenta, unless it be morbidly adherent,—or, at least, in bringing it to the os uteri within reach of the finger, which is almost the same thing, as its complete removal can then be effected at any moment without delay or difficulty."

The paragraph, therefore, discusses the management not simply of the Third Stage, but of special cases; and if we consult Churchill as a representative of the Dublin school, we find him give these directions for the management of the Third Stage:—

"The hand should be placed upon the abdomen to ascertain [from the size of the uterus] whether there be twins; if not, we may proceed to apply the binder, which should embrace the hips inferiorly and the whole abdomen. It should be pinned firmly, but not too tight, and be kept on during the whole time the patient is in bed. . . . Before

applying the binder, or immediately afterwards, the uterus should be firmly grasped, and firm pressure made in the direction of the axis of the brim. In most cases, as the placenta has been detached by the last pains, it will be felt to recede under the hand, and the after-birth will be found in the vagina or in the bed. If not, the nurse should be directed to make pressure as soon as the binder is applied, and we should make firm but steady, and not excessive traction by the cord. I have adopted this practice for twenty years, and rarely have the placenta detained more than five minutes, nor have I had a case of hæmorrhage during that time. If we wait some time before making pressure, the uterus closes over the after-birth enough to retain it, but not enough to expel it."

Now whilst the masters of the great Dublin school, like Clarke, Collins, etc., deserve all credit for their advocacy of compression of the uterus in aiding the separation and extrusion of the placenta, I cannot justify M'Clintock in identifying with the Crédé method what I described in my paper in 1863 as "British practice of following down the uterus with the hand, and thus aiding the contraction of the uterus in the expulsion of its contents by external pressure," a practice which was conjoined with traction on the umbilical cord or placenta. It has always seemed to me that the great value of the Crédé method lay in doing away entirely with the dangers (1) of traction on the cord, and (2) of introducing the fingers into the lacerated genital cavity.

1. As regards the danger of pulling on the cord, I will only refer now to the risk of its giving way. Its tensile strength is not so great as might be supposed. A quarter of a century ago my friend, the late Dr James Sidey, brought me an umbilical cord which he had torn off a placenta without, as he thought, exerting almost any degree of force. At that time I took occasion to test the strain at which the cord tore through in a series of cases. A spring balance was attached by a string to the fœtal end of the cord, and whilst an assistant grasped the placenta the balance was pulled till the cord gave way. The degree of resistance was very variable. But what is important to observe is, that whilst the cord will sometimes bear a strain of over 18 lbs. without being torn, it may, on the other hand, give way under a pull that is less than 2 lbs. in weight. In

one-fourth of the cases thus tested it yielded with a pull of 4 lbs. and under.

2. With regard to the introduction of the hand or fingers to lay hold of the placenta, whilst every practitioner knows how to lessen the risk of septic inoculation through disinfection, he knows also that he can better secure the results of an aseptic accouchement if he can get the placenta extruded without touching even the vaginal mucosa. This is what Crédé has taught him to do.

SKIN-GRAFTING BY THE WOLFE-KRAUSE METHOD. REPORT OF NINE CASES

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CASE I. A healthy, well-nourished child, about 15 months old, was severely burned on the back of the right hand. At the time of the operation, five months later, the resulting cicatrix, soundly healed, extended from opposite the bases of the metacarpals on the dorsum of the hand to the proximal, distal, and proximal inter-phalangeal joints of the index, middle and little fingers respectively, and to the root of the nail on the ring finger. Laterally it reached from one border of the hand to the other. The cicatrix was thick, hard, thrown into folds, and evidently involved the whole thickness of skin. By its contraction it had drawn back and fixed the fingers at an angle (of hyper-extension) of about 135° at the metacarpo-phalangeal joints. The proximal inter-phalangeal joint of the ring finger was also hyper-extended greatly, while the distal joint was flexed. The heads of the metacarpals were approximated and the middle pair was pushed forwards. A web joined the dorsal aspects of the fingers, extending distally almost as far as the cicatrix. By the contraction of this web the fingers were pulled together and more or less crumpled up. The hand was thus practically useless.

For a week previous to operation the hand was carefully prepared by thorough and frequent washing, by being enveloped occasionally for two or three hours in a boric "soak" (boric lint wrung out of saturated boric acid solution), and in the

intervals, after being thoroughly dried with a clean towel, dry boric powder was dusted into the interdigital spaces and a fingerless glove worn to prevent soiling.

At the operation, after the usual disinfection, the whole cicatrix was dissected off, and it was found that the parts could be easily returned to their normal position. Suitable strips of skin, one for each finger, and each extending over the corresponding raw surface on the dorsum of the hand, were cut from the trunk. (The method of doing this is described later.) These strips completely covered the vivified surface, with the fingers fully flexed, except at the web between the ring and little finger where a small extra piece of skin had to be applied.

The hand was dressed. The fingers, flexed over a ball of cotton wool, were retained in position by plaster of Paris bandages reaching almost to the elbow-joint. At the end of a fortnight the dressings were removed for the first time, and all the grafts were found to be adherent and living. Healing was complete in three weeks, and in six weeks the child was made to use the hand freely.

When seen six months after operation the child had full use of his hand, and all movements were normal, but abduction of the little finger was slightly impaired by a small web between it and the ring finger—a condition which can easily be remedied if required when the child is older.

CASE II. A healthy adult, a baker by trade, had his hand crushed between rollers. As a result, the whole of the skin sloughed, back and front, from an inch above the wrist-joint to the metacarpo-phalangeal joints, and along the palmar aspect of the thumb. Thiersch's skin-grafting was used to cover the granulating wounds. For five months after the injury considerable contraction of the scar occurred, causing great stasis and swelling in the fingers. Owing to the contraction of the scar, which was also adherent to certain tendons, and to swelling, the fingers became very stiff and fixed in a strongly abducted position. Massage and frequent bathing made the scar much more supple, and greatly reduced the swelling and fixation of the fingers, except the little finger which remained abducted so much that it was in the way,

especially preventing the patient from putting his hand in his pocket. A thick fibrous band, extending from the palm along the palmar aspect of the thumb, had resisted all means used to stretch it. It pulled on, and fixed the thumb so that the strongest efforts of abduction and extension could not bring its tip further outwards than opposite the interdigital space between the middle and index fingers.

The hand was thoroughly disinfected for several days. At operation, the fibrous band binding down the thumb was excised *in toto*, and the thumb almost fully abducted and extended. The little finger was amputated, and the skin, dissected off its inner aspect, was used to cover accurately the raw surface caused by the removal of the fibrous band.

Perfect healing had occurred in three weeks. Six weeks after operation the patient had fairly free movement in his thumb, which showed no tendency to return to its former malposition.

In cutting out the fibrous band the flexor sheath of the thumb tendons was opened over an area about ¼ inch in diameter. No bad effects resulted to either graft or tendon.

The whole operation was carried out painlessly under local anæsthesia, produced by injection of 2 per cent. eucain solution.

CASE III. A young railway porter, while coupling trucks, allowed the thumb of his left hand to get between two buffers. As a result the whole thumb was crushed to a pulp, and the skin corresponding to the second, third and fourth metacarpals was completely torn off the palm. The dorsum of the hand was denuded to a similar extent, but the skin was not torn through, so that the ragged remains of the thumb and skin of the palm and dorsum remained attached by a broad pedicle of skin, extending from the radial styloid process to the metacarpo-phalangeal joint of the middle finger. Pending his arrival in hospital a tourniquet had been left on the arm for two hours. The detached skin was crumpled up on the back of the hand, and was quite cold when the tourniquet was removed. The patient was anæsthetised, and the parts disinfected as thoroughly as possible. The thumb, including its metacarpal, and all ragged, soiled tissues was removed.

The skin was then replaced on the front and back of the hand, in the rather forlorn hope that it might heal on. This it did not do.

Four weeks after the accident, all the dead skin had separated, and the denuded surface was covered with clean, healthy granulations, except at one part where a small piece of dead fibrous tissue was still adherent. At the operation the superficial granulation tissue was scraped away, the slough removed, and the underlying part thoroughly scraped. A strip of skin, 25 inches long and 1 inch in breadth, was detached from the trunk, cut into pieces 3 to 4 inches in length, and applied to the raw surface. The site of the adherent slough was left uncovered. The dressings were removed ten days later, as it was considered unsafe to leave them longer, until the results of this method of grafting in the case of granulating wounds was better known. It was found that only two small areas in the grafts, each about ¼ inch in circumference, had died. All the rest was perfect, and healing was complete in five weeks after operation. The dead pieces of graft separated a fortnight after the first dressing.

At the second dressing, seventeen days after operation, the superficial layers of the skin were discoloured—greenish black—and ultimately separated, leaving a speckled surface, which rapidly healed. This condition was also noted in Case VI.

CASE IV. A young adult female, healthy, save for the presence of a patch of tuberculous skin on the side of her neck, had been operated on, twelve years previously, for tubercular cervical glands. Recurrence had taken place, and repeated operations were performed. Within the past two or three years the skin had become infiltrated with tubercular disease. It had been repeatedly scraped under chloroform, and otherwise treated without success. When seen by me, the neck glands were evidently free from disease, but the skin was affected over an area about 2 inches in diameter, the centre of which was 3 inches below the angle of the jaw. The middle of this area was typically ulcerated, and the periphery studded with tubercles. The discharge from the ulcer, necessitating a change of dressing several times a day, was very troublesome to the patient.

The neck was carefully prepared by washing, application of turpentine, carbolic "soaks," etc., for several days, and the head washed thoroughly on several occasions. The whole of the diseased area, with an ample healthy margin around it, was excised. The subcutaneous tissue was healthy, and two strips of skin, cut from the trunk below and behind the left breast, were placed on it. Over the dressings, plaster of Paris, enveloping head, neck and shoulders, was put on, in order to secure fixation as much as possible. Slight movement, of course, as when the patient swallowed or even spoke, could not be prevented. The dressings and plaster were kept on for three weeks.

At the end of that time, it was discovered that the grafts had been slightly displaced backwards, probably during bandaging, so that a narrow strip, $\frac{1}{8}$ inch in breadth, had to granulate at the anterior border of the area operated on, and a corresponding small strip of the posterior graft had died, where it overlapped the skin. Otherwise everything was perfect, and at the end of six weeks the parts were looking better than any of the other cases did at a similar period, in spite of the unfavourable position and the presence of the bluish-red cicatrix where granulation had to take place.

CASE V. A rather delicate boy of twelve had an ugly circumscribed patch (1 inch by $\frac{3}{4}$ inch) of lupus vulgaris on his right cheek just over the lower margin of the orbital cavity. Its long axis was parallel to the palpebral border. It had been previously burned, evidently with the idea that it was a nævus. During the few weeks before operation it had grown rather rapidly. There was a slight tendency to ectropion. On one occasion the boy's urine gave a distinct reaction to tests for albumen, but later examinations gave no such result. He had well marked "adenoids" which were removed during convalescence from the grafting.

The lupus patch, with a broad margin in the depth as well as on the surface, was excised. A patch of skin, with a little subcutaneous tissue attached, of such a shape that it fitted the raw area on the cheek, was taken from over the left lower ribs (so as to be clear of the axilla). The subcutaneous tissue—a thin layer—was left attached so that the "hole" in the cheek

should be filled up. The dressings were left on for a fortnight. The graft healed well except at its inner part where about ⅛ inch died—possibly owing to infection from a slight catarrhal discharge from the eye. The graft bulged in its middle part, so that it might have been better to have left out the subcutaneous tissue on its under surface. At the end of four weeks it was completely and firmly healed. The surface was rather discoloured—brown and freckled-looking—for several weeks longer. This was probably due to a greater amount of blood in the graft owing to the presence of the subcutaneous tissue. There may have been a little escape of blood beneath the graft as there was a small capillary ooze at one point, which it was considered would be easily restrained by the pressure of the graft and dressings. The ectropion still persisted but to a less degree.

CASE VI. A healthy adult male had, eight weeks before admission to hospital, suffered from severe cellulitis of the right arm and forearm, which, in spite of free incision at various parts, caused the skin to slough over a large area, $6'' \times 4''$, on the inner side of the arm, and over smaller areas on the front and back of the forearm. The skin had also been detached over the deltoid and outer part of the pectoralis major for a considerable distance, and this undermined part and also the granulating surfaces where the skin had sloughed, were discharging pus freely.

After the patient was anæsthetised the granulations were freely scraped away from both the surfaces and the undermined part which were then rubbed with 1-20 carbolic lotion. A fortnight later healthy granulations covered the surfaces and the skin was adherent to the surface of the deltoid, but a small sinus persisted at the tendon of the pectoralis major.

The granulations looked so healthy and vascular that, at the grafting operation which was now performed, the strips of skin were simply laid on to the granulating surfaces without further preparation. The sinus was packed with a little cyanide gauze wrung out of 1-20 carbolic lotion, and the dressings so adjusted that the sinus could be dressed daily without disturbing the grafts.

The gauze packing was changed every three or four days,

and gradually shortened till it was left out altogether at the end of a fortnight, when the dressings over the grafted areas were removed. Only two of the grafts were quite sound; other two were quite dead and loose; the others were firmly adherent, but looked greenish-black on the surface. This was due to the fact that the superficial layers, including probably the apices of the papillæ furthest removed from nourishment, had died. These dead pieces separated in the course of ten days, leaving a speckled surface. This appearance is caused by small islands of granulation tissue, corresponding to the apices of the papillæ, cropping out in the macerated epithelium growing from that left between the papillæ. These healed over in a few days, and healing was complete over the surfaces in eight weeks after operation.

CASE VII. A delicate, ill-nourished boy had the skin torn off the front and back of the left hand in a machinery accident. The skin was still adherent by a broad base when he came to hospital, and the house-surgeon disinfected and replaced it, in the hope that it would heal entirely. It sloughed, however, and three weeks after the accident the wound was covered with granulations which discharged rather freely, as it turned out, for the success of grafting operations. At this time the patient was anæsthetised, the granulating surfaces were carefully scraped clean with a Volkmann's spoon, and washed; grafts were cut and applied in the usual way. Here again the dressings were removed at the end of ten days, as there was a slight mawkish odour about the part. One graft in front and another behind had held successfully, but the others had not, and were lying loose in a rather copious purulent discharge. The greater part of the raw surface in the palm of the hand was covered, however, and about half of that on the back. Epithelium spread rapidly over the remaining surface, and about five weeks after operation the boy was allowed to go to the country. He was provided with dressings, and with strict injunctions as to the treatment of the two small areas (each rather less than a 6d. piece in size), which were still uncovered by epithelium. In less than three weeks he returned with his hand in a bad condition. He had taken lay "advice" in the country, and applied ivy leaves to

hasten the healing, with the result that the whole surface, which had healed by "second intention," was denuded of epithelium and was in a filthy state. But the grafts had held!

The surface is, at the time of writing, healing over slowly once more.

CASE VIII. A young healthy moulder was affected in the left hand with Dupuytren's contraction of the palmar fascia, which bound the ring and little fingers firmly flexed on the palm. The other fingers were quite free.

The whole of the affected fascia was dissected away with the overlying skin. The prolongations of the fascia along the sides of the fingers and to the intermetacarpal ligament were cut across, and all resisting structures similarly treated, until the fingers could be put quite straight without force. Thus the inner two-fifths of the palm, from a point ½ inch below the level of the metacarpal bases and the palmar surfaces of the affected fingers as far as the centre of the middle phalanges, were denuded of skin and subcutaneous tissue. This raw area was covered by two suitable strips of skin cut from the trunk in the ordinary way. Dressings were applied and the hand put on a straight splint.

The strip corresponding to the little finger adhered and healed well in the end. Owing to failure in asepsis in skin of hand or graft, that corresponding to the ring finger sloughed in part. There was no tendency to flexion in either finger. In this case also the dressing was removed on the tenth day because of the smell of the discharge. At subsequent dressings, the same separation of the superficial layers of the grafts was noticed as in Cases III. and VI., leaving the speckled surface below. This soon healed entirely, and subsequently epithelium spread over the granulations covering the parts where the graft had died and separated. The result was excellent.

CASE IX. The last case was a well-nourished man, healthy, except for the presence of a varicose ulcer on the inner aspect of the left leg, which had proved very resistant to all ordinary methods of treatment, so that the patient was glad to have

recourse to operation. The ulcer was rather larger than a five-shilling piece.

After disinfection of the parts by antiseptic fomentations, etc., excision of the ulcer *in toto* was performed. Care was taken to cut very clear of it into healthy skin around and healthy tissue below. The raw surface was accurately covered by two pieces of skin cut from the trunk. The varicose veins above were partially excised and tied. The limb was put up in plaster of Paris for three weeks. When the plaster was removed, everything was apparently satisfactorily healed. Four or five days after, owing to the demand for beds in the ward, the patient had to be sent home, with a quantity of gauze and cotton wool, covered by a firm bandage, on the leg. He was ordered to rest in bed for some weeks, but was to drive to hospital every week for inspection. At that time the grafts were quite healthy. Ten days later he came back, and the grafts were found purplish in colour, sodden-looking, and bereft of the cuticle. The junction between the grafts and neighbouring skin also showed signs of breaking down. The patient was charged with having used the leg, or allowed it to hang, but he denied having done so. The appearance of the leg, however, was against the truth of his statements.

At the next dressing, a week later, the grafts were pronounced quite dead. A week after that the appearance of the part as a whole was greatly improved, and the grafts were still living and were healing. At the time of writing complete healing has occurred, except over a small area in the middle of the two grafts. This interrupted and disappointing convalescence would probably have been quite satisfactory had the patient been kept under strict surveillance for a few weeks longer.

Remarks.

As possibly this method of skin-grafting is not so fully known as it deserves, a short description of it may be of service. I understand that Thiersch, during his experiments in skin-grafting, tried and discarded this method as inferior to that known by his name. In 1875 Wolfe of Glasgow carried it out successfully, and published his results. Too little notice, however, was accorded to his statements, but in 1895 Krause of Hamburg apparently brought the method

into repute. The Wolfe-Krause method of skin-grafting consists in transplantation of strips or pieces of the entire thickness of the skin, thus differing essentially from Thiersch's method, in which strips of epidermis are shaved off, usually from the front of the thigh.

The technique I have employed in all cases has been the following. The part to which the grafts are to be applied, and the part from which they are taken, are thoroughly disinfected in the ordinary way. The process of disinfection should extend over three or four days, if possible, the length of time varying with the thickness of the epidermis on the parts. Where there is a granulating surface to be covered, I think it best, as a preliminary operation, if the surface is not already aseptic, to scrape away the granulations thoroughly, and disinfect the vivified surface and parts around in a manner similar to that so well described by Messrs Cheyne and Burghard in the chapter of their book which deals with ulceration. The operation is preceded by a final disinfection of the parts. All antiseptics are washed away by normal salt solution. The diseased part, cicatrix, tumour, ulcer, or other pathological condition, is excised if possible, care being taken, where disease is present, not to soil the vivified surface, either by allowing discharge to trickle over it, or by letting the scalpel come in contact with the diseased part. Both may be prevented by stitching a pad or mop over the diseased area. Bleeding is controlled by pressure with pads wrung out of warm normal saline solution, by pressure forceps, or even by touching the bleeding vessel with the finest point of a cautery. Ligatures must on no account be used, except perhaps at the very edge of the vivified surface, where they may be so applied as not to interfere with the grafts. This was done in Case IX., where a large varicose vein ran across the site of the ulcer. While the grafts are being cut, pressure for stopping hæmorrhage is applied by the assistant.

The site from which the grafts were taken was in every instance, except Case II., the trunk. A strip of skin was removed exactly in the same way as the skin is reflected before beginning the anatomical dissection of a part, so that even a first year's student can be trusted to do that part of the operation, provided his hands are clean. In Case V., the piece of

skin was shaped to suit the case, but in the others a horizontal strip, about 1 inch in breadth, and varying from 5 to 25 inches in length, was removed from the front and sides of the chest and abdomen, generally about 4 inches below the nipples. Usually the fat was removed from the under surface of this strip. It saves much time to raise the strip rapidly by bold quick strokes of the scalpel, and then to remove the adherent fat with a probe-pointed scissors curved on the flat. This strip of skin is cut into suitable lengths, which are trimmed and fitted to the vivified surface. After a little practice, one can cut the strip freehanded of the proper length to fit that surface—otherwise measurements should be made, allowing an excess of about ¼ for contracture of the detached skin. A basin with warm salt solution should be at hand in which to wash the grafts free from blood-clot, and to immerse them until they are to be used, so that they do not become cooled or infected. I find it best to fix the grafts in position by interrupted sutures of No. 0 catgut, at intervals of 1 to 1½ inches. This will prevent the slight dislocation of the grafts, such as occurred in one or two of the cases. It is not necessary that the grafts should *completely* cover the vivified surface. The pressure of the dressings will flatten them out to a considerable extent. Before applying the dressings it is well to press a pad, wrung out of saline solution, firmly over the grafts, so that any air or blood, which may be beneath, is pressed out.

The most suitable dressing to apply is plain, sterilized, absorbent gauze and cotton wool. The gauze is placed next the grafts, and a large quantity of cotton wool is used. The bandage should be put on equally and firmly. Then to prevent any movement, the part is enveloped in plaster of Paris.

Strips of "protective" next the grafts are not good. These only prevent the slight ooze, which comes up between the grafts, and the secretion of the glands in the grafts from drying. Thus they become more or less macerated on the surface, and if asepsis be not perfect, the growth of bacteria in the moisture may destroy their vitality.

The part of the trunk selected for yielding the grafts was chosen in preference to the thigh or other part of the body for the following reasons. In the majority of patients it is covered by quite short, downy, invisible hairs. A wound there is less

painful than in another part, *e.g.* the thigh. The patient's movements are less confined during the healing of the wound. It is easily disinfected, and the process of disinfection (by antiseptic "soaks") can be easily carried out without preventing the patient from continuing his ordinary occupation.

When the strip is removed the edges of the skin are easily approximated, with little or no tension on the sutures. Any tension there may be is completely relieved by relaxation strips of plaster. Union, as a rule, occurs by first intention, leaving a linear scar. When the effects of the anæsthetic and pain of the wound have subsided, within twenty-four to thirty-six hours the patient may, in suitable cases, get out of bed, provided that these relaxation strips of plaster have been firmly applied.

The dressings on the grafts should be left untouched for three weeks at least, if possible. Where this could be done the results were uniformly excellent, both immediate and remote. When the first dressings had to be removed in ten to fourteen days, the immediate result was not so satisfactory. (See notes on Cases III., VI. and VIII.) It is said by Henle that such grafts are nourished for the first three or four days by transudation. At the end of that time small vessels may be seen, microscopically, growing into the grafts, joining with those already there. In removing first dressings at an early stage (ten to fourteen days) I think that these newly formed junctions are probably ruptured to a greater or less extent, hence the interference with the nutrition of the superficial layers in these cases, and the danger of actual death of the grafts occurring, in proportion to the extent of the interference. Until healing is complete the dressings should be changed as little as possible for the same reason. There is great danger in overdressing such cases. This adhesion of dressings may be much lessened by soaking them with peroxide of hydrogen solution before attempting to remove them. In the case of a lower extremity, it will probably give better results to leave the first dressings on for four weeks or more, if asepsis is sure. I think that the bad result in Case IX. would have been avoided had this been carried out. The circulation is more sluggish in the lower extremity, especially where varicose veins are present. Krause advises that regular massage of the leg should be carried out after grafting for ulcer.

The use of strips of "protective" claims its only advantage by avoiding adhesion of dressings, and the consequent danger of rupturing the newly formed vessels by their removal.

Enderlen states that the grafted tissues are gradually removed and new growth takes place from below, the entire graft being replaced at the end of four weeks. This, I venture to think, is not the case, judging from the appearance presented by the most successful cases in the series at the end of three weeks, when the grafted skin looked quite normal. Even at the end of a fortnight the grafts would bleed on being scratched, and healing takes place probably exactly in the same way as in an ordinary "first intention" wound after the vessels have been formed.

One should not be in a hurry to condemn the result when the dressings are removed, even if the grafts look unhealthy at first sight. If they are strongly adherent it may be that only the top layers have died, while the lower layers have held and lived. A week or ten days will make the result certain, for by that time the dead parts will be more or less detached, and what remains below can be seen.

I saw Case IV. ten weeks after operation and found that sensation was almost normal. The patient could tell correctly when the point or head of a pin was pressed gently on the grafts, and also when the slightest touch was made. Sensation for heat and cold was quite definite. Case V. was seen four months and a half after operation. Sensations of touch and pain, and the thermic sense were then quite normal.

With regard to the after-treatment of such cases, it is probably safest that the patient should wear a supporting bandage over grafts in the upper part of the body for at least six to eight weeks after operation; and in the lower limbs for two or three times that period, according to the general circulation of the patient, and the local circulation in the grafts. Movement of the part should not be allowed within six weeks. Walking should be prohibited for two months or more, and even then, only what is absolutely necessary should be permitted. The hand may be used for light work in two or three months' time, according to the site and condition of the grafts (Cases II. and III.). When ordinary dressings are left off, lanolin or some bland ointment may be gently rubbed

over the grafts, so as to prevent any tendency to cracking of the skin. When grafting is made on the lower extremity, the limb should be bandaged in plaster of Paris, with a splint protruding beyond the foot, so that the patient cannot walk or hang the part (experience with Case IX.). If, however, the circulation be very sluggish, Krause's recommendation will probably be better, *i.e.* to apply such dressing and bandages as will permit of the leg being massaged.

I consider that this method of skin-grafting is preferable to Thiersch's because it gives a more natural-looking, more resistant, and less contractile surface in a shorter time. In a successful case, the skin looks natural from the first, only the lines of junction between the pieces of graft and the surrounding skin stand out red. These junctions tone down in appearance and are often but little noticed in a year's time. That the surfaces are more resistant to friction or other external influence is also certain, as is shown by the fact that Cases II. and III. tested this statement pretty severely at the end of eight weeks. Case VII. was also a good example of the power of resistance of the grafts, where they held in spite of the very unfavourable conditions which caused the rest of the scar to break down completely. There has been practically no contracture even in the most extensive case, except at the parts where the grafts failed to hold.

The method is easier to carry out than Thiersch's, for it requires some practice to shave off strips of epidermis satisfactorily.

The cases reported here have not been selected in any way. They simply form a sequence of cases in which it was thought that skin-grafting would probably do good. One is thus enabled to estimate the comparative value of the two methods in different cases.

From a consideration of these cases, it may be said that the grafts are most successful when placed on clean-cut, freshly vivified areas of normal tissue; less so on scraped granulating surfaces; and least of all on uninjured granulating surfaces; which is, after all, what might be expected. It is wise, therefore, to procure, wherever possible, a basis of freshly vivified healthy tissue, by excising widely the pathological part for which the grafting is to be done. When this is impossible,

without resulting in increased loss of function in the case of granulating surfaces, probably Thiersch's method will give better results.

WOUND OF THE EXTERNAL ILIAC ARTERY TREATED BY SUTURE

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W. H. aged forty-five, a labourer, was brought on the morning of January 13th last, to the Glasgow Royal Infirmary by the police, said to have been stabbed with a pocket-knife—the instrument was, I believe, never found—and to have lost a large quantity of blood.

The hæmorrhage had ceased by the time he had reached the hospital, but his clothes were soaked with blood.

On examination, a small wound about ¾ in. long was found immediately above and parallel to Poupart's ligament on the left side, and there were some abrasions present on the upper part of the left thigh. Shortly after his admission he vomited, and the straining associated therewith brought on some more bleeding; but while only a small quantity of blood escaped from the skin wound, a large swelling formed in the left iliac fossa.

When I saw the patient he was a good deal collapsed, very pale, his pulse rapid and small; there was a distinct bulging of the abdominal wall over the left iliac fossa, and on palpation quite a firm resistance could be felt there, reaching up to the level of the superior iliac spine. The pulsations of the left posterior tibial artery could be felt at the ankle but I thought they were smaller than on the right side.

The original skin wound was enlarged in both directions—in the aponeurosis of the external oblique, a wound ¾ in. long, and ¼ in. above and parallel to Poupart's ligament was found; this was enlarged outwards and a large blood-clot found occupying the iliac fossa outside the peritoneum, which was uninjured. The clot was scooped out and a wound of the external iliac artery at once became evident. It was situated on the antero-internal aspect of the vessel and a small clot

projected through it. This wound was fully ¼ in. long, ran parallel to the original skin wound, and therefore rather obliquely to the axis of the artery, so that, owing to the contraction of the muscular coat it had an elliptical shape.

My house surgeon, Dr Oswald Smith, compressed the aorta while I removed the clot from the wound in the artery, and then sutured it with catgut. As the result, a very decided kink was produced in the artery, but no leakage took place when the aorta was released. The iliac vein was uninjured though its sheath was much bruised, and the knife must have passed right down between the two vessels. The wound in the artery was situated about ¼ in. or thereabouts above the origin of the deep circumflex iliac which I tied, but I could not find the deep epigastric and it is probable that the iliac had been cut just at its point of origin. It was not possible to recognise the layers of the abdominal wall owing to the discoloration of the tissues from extravasated blood, and they were sutured as one layer.

When the patient was put back to bed I could not detect any difference in the tibial pulses at the ankle.

The wound healed aseptically—the patient was shown at the meeting of the Glasgow Medico-Chirurgical Society on March 15th. He was last seen on July 14th, when there was no sign of any yielding of the arterial coats and no sign of hernia, no atrophy of the limb, the measurement at the widest parts of the thigh and the calf was the same on each side. He had no pain or abnormal sensation in the limb and considers it "as strong as ever it was." He had resumed work as a labourer some time previously. As the number of cases where suture of an artery has been carried out is comparatively small, I have thought it might be worth while to record this one. Where successful suture of a large artery is possible—by "successful" I mean the preservation of the lumen of the vessel—it will probably be more satisfactory than ligature. The risk of gangrene is reduced to a minimum, there ought to be no wasting of that segment of the body to which the vessel is distributed, and possibly those peculiar sensations of weakness, and the vague pains which patients complain of, often for long periods after ligation of an artery in continuity—and in some cases that I know of these have

caused very serious discomfort—will be avoided. But all cases of wound of an artery will not be suitable for suturing. The chief factor for success is asepsis.

A CASE OF MUSCULO-SPIRAL PARALYSIS FOLLOWING SEPARATION OF THE LOWER EPIPHYSIS OF THE HUMERUS. RECOVERY AFTER OPERATION [1]

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H. K., a boy aged five years, fell from a tree on May 11th, 1900, and sustained a separation of the lower epiphysis of his left humerus. The arm was placed in splints for seventeen days. When the splints were removed his wrist was flexed, and he could not raise his hand.

The black strand on the left is the nerve drawn in at the point where the epiphysis is displaced backwards.

When seen for the first time at the Deaconess Hospital in the end of June, he had complete "wrist drop"; the axis of the forearm was deviated slightly inwards; extension of the elbow was unimpaired, but extreme flexion was impossible. He was able to supinate the forearm partially, and extend the last two phalanges of all the fingers, but was unable to extend the wrist and knuckles. When his wrist was extended for him, and he grasped anything firmly, the flexion at

[1] Case shown at Medico-Chirurgical Society, June 5, 1901.

the wrist gradually returned. Sensation in the hand was slightly impaired. There was a visible prominence in the antecubital fossa, caused by the forward displacement of the diaphysis. The condyles, which were in their normal relation to the radius and ulna, were correspondingly displaced backwards. The head of the radius moved freely. Union of the fragments had taken place, with considerable formation of callus.

Electricity and massage were tried, and resulted in slight improvement during the first week. As, however, the boy was not in good health, he was sent home, and the treatment carried on there. During July he had measles, but recovered rapidly, and returned to hospital in the end of August. The condition of the hand and arm were unaltered, except that there was less callus, and the line of separation could be distinctly felt.

On September 8th the nerve was exposed between the supinator longus and brachialis anticus, and the nerve of supply to the supinator was seen entering that muscle. The main trunk was followed down to the edge of the diaphysis, at which point it became narrower, and was firmly adherent to the periosteum. On tracing it further, it was found to dip over the projecting edge of the diaphysis into the hollow beneath, and was closely bound down to the line of separation of the epiphysis. It was freed from the fibrous tissue investing it, and followed to its point of bifurcation. The periosteum over the end of the shaft was then pushed aside, the sharp corner rounded off, and the periosteum replaced and sutured. The nerve, which was exceedingly attenuated, was laid in a new channel to the outer side, and the wound closed.

After ten days, the wound being healed, massage and electricity were applied daily. In three weeks he could move his wrist and knuckles slightly. By the end of November the hand could be straightened, and in another month he could dorsiflex almost as well as with the other hand.

In February 1901 he had completely recovered the use of the limb and was able to play notes on a piano, raising the individual fingers in succession. A point of interest exists in the fact that he remains left-handed, although for five months he was dependent on his right arm alone.

Recent Literature

CRITICAL SUMMARIES AND ABSTRACTS

PATHOLOGY

TUBERCULOSIS IN MAN AND THE LOWER ANIMALS

By THEODORE SHENNAN, M.D., F.R.C.S.Ed.,

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Transmission of Tuberculosis from the Lower Animals to Man.

THE statements made by Koch, at the recent Congress on Tuberculosis, in connection with this aspect of the subject, and which we seek to traverse or disprove, are the following:—

"If the bacilli of bovine tuberculosis were able to infect human beings, many cases of tuberculosis caused by the consumption of alimenta containing tubercle bacilli could not but occur among the inhabitants of great cities, especially the children." Such an infection would of necessity produce primary tuberculosis by way of the alimentary tract. From his own experience and from statistics examined, he finds it "indubitably shown that primary tuberculosis of the intestine, especially amongst children, is a comparatively rare disease," and concludes that the extent of infection by milk and flesh of tuberculous animals is hardly greater than that of hereditary transmission, and may be disregarded."

Up to quite a recent date medical men generally believed that in the case of children, at all events, ingestion tuberculosis was more important and more frequent than that of respiratory origin. Though we now know that such a belief is erroneous, we cannot accept Koch's dictum that the risk of infection by ingestion may be disregarded.

That his conclusion is incorrect, at all events so far as Great Britain is concerned, is proved by a considerable body of clinical and statistical evidence; and even in other countries evidence is obtainable which warrants us in doubting the absolute correctness for all peoples and climes of Koch's sweeping statement.

In some countries, as in our own, the chances of infection are greater than in Germany. We must remember that, whereas the use of boiled milk is very common, if not the rule, in Germany, it is the exception in Britain. No doubt the use of "Pasteurised," "sterilized" or cooked milk is increasing in this country, but the flavour of boiled milk is not grateful to the national palate, and we still prefer raw milk with all its ex-

traneous contents, derived from the cow, the milker, the byre, and later from the dust of occupied apartments.

In effect we may, for our purpose, take these existent conditions as a vast experiment which rather nullifies than supports Koch's contentions. We have, other things being equal, two large, bottle-fed, infant populations, the one fed on sterilized milk, the other on raw milk, and we find that the results are such as were to be expected; the former—if Koch's statements may be accepted—remains to a great extent free from ingestion tuberculosis; the latter, in large proportion, suffers.

Again, in healthy subjects consumption of raw milk, with all its concomitants, causes no evil effects, as is proved by the fact that probably all of us have unwittingly partaken of tuberculous milk. Clifford Allbutt has tested this by allowing his own family and servants, as well as two families living near, to consume the highly bacilliferous milk of a favourite cow. Not one individual developed the slightest trace of tuberculosis. This is perfectly credible, but the conditions of the experiment, if so it may be called, do not fit the case. Healthy individuals do not readily acquire tuberculosis, but only such as are predisposed through a general weak condition of body, or through bad environment, or who are the subjects of intestine or gastric catarrh. The majority of cases of respiratory tuberculosis may be left out of account, as these usually result by infection from a previous case in man, though, as we shall see, all cases of respiratory tuberculosis must not be looked upon as necessarily respiratory in origin.

A great deal of information is gained from examination of suspected cases after death; but here again it must not be forgotten that only the very severe cases of abdominal tuberculosis come to the *post-mortem* room. Tuberculosis, and particularly abdominal tuberculosis, tends very frequently to heal. Taking *post-mortem* statistics generally, Niven (*Lancet*, '97, i. p. 958) finds that records of necropsies at home and abroad indicate that traces of healed tuberculous lesions exist in from twenty to fifty per cent. of all persons dying of other diseases.

Taking the case of abdominal tuberculosis specially, Sir William Gairdner, in his "Lectures to Practitioners," says: "A far too grave prognosis is arrived at in cases of tabes (mesenterica); consequently many cases of tubercular disease, not only of the mesenteric glands but also of the peritoneum, recover, only the graver cases succumbing."

It is a matter of common knowledge and experience that cases of undoubted abdominal tuberculosis with, frequently, no evident trace of tuberculous mischief elsewhere, will heal after, or are cured by laparotomy.

Churton (*Lancet*, '97, i. p. 594) gives instances of rapid absorption of tuberculous masses in the abdomen *without* operation, and others at the same meeting related similar cases coming under their own observation.

Woodhead (*Lancet*, 1888), after quoting statistics, says, "It is evident that tubercular conditions of the abdomen are much more common than can be inferred even from the figures quoted."

Hence *post-mortem* statistics must not be taken as indicating the prevalence of abdominal tuberculosis during life.

Koch states that he has only seen two cases of undoubted primary intestinal tuberculosis; and Müller, from 500 autopsies on children at Munich, concludes that the intestines are seldom the avenue for tuberculous infection in children. Though this, again, is not the experience of physicians and pathologists in this country, we must note that ingestion tuberculosis does not limit itself to producing intestinal ulceration; but, as all of us have seen, the organism may pass through the wall of the intestine, without markedly affecting it, and cause a tuberculous peritonitis, or more often tuberculosis of the mesenteric glands. Following on this, other groups of glands may be infected, such as the retro-peritoneal, the cœliac, posterior mediastinal, bronchial and root glands, and these, breaking down into a bronchus or vessel, may give rise to a secondary respiratory tuberculosis, or to a generalised tuberculosis, just as the condition may travel in the reverse direction from primarily infected bronchial glands.

Once more, in ingestion tuberculosis the bacilli may invade by way of the pharyngeal and faucial tonsils, and proceed downwards along the cervical chains of glands to the mediastinal and root glands. This course has been demonstrated experimentally in the pig by Dr Sidney Martin, who failed to infect by inhalation of bacilli, but found that in feeding experiments the rule was that invasion took place by way of the tonsils which are very prominent in the pig. By many, chronically enlarged tonsils in man are looked upon as predisposing to pulmonary tuberculosis. Sidney Martin lays great stress on his experiments as proving the etiology of the analogous cases of "strumous" glands in children. (Report of Royal Commission on Tuberculosis, 1895-96.) All practitioners have shared the experience of Wohlgemuth when he states that in such cases removal of the affected glands removes the focus of disease, and cures the patient.

Böllinger, F. Hueppe, Weleminsky, and Sims Woodhead also emphasise the importance of this method of infection in children.

The last named says (*Lancet*, '94, ii. p. 958), "I am driven to the conclusion that this method of infection of the glands through the tonsils must be of comparatively frequent occurrence, especially in children living under insanitary conditions, and subjected to various devitalising influences." Further referring to the fact that in pigs the lungs may be affected secondarily to tuberculosis of the pharyngeal tonsillar structures through the connecting chains of glands, he says, and my own experience supports his statement, "I have seen a similar line of invasion in children, sometimes alone, but usually associated with tubercle extending from the mesenteric glands in the direction already indicated. In all these cases, it would appear that the glands at the root of the lungs become tuberculous and caseous before the pulmonary tissue itself shows any evidence of disease." Of course, in such cases, one must examine the lungs very carefully to exclude the presence of any old dried-up tuberculous focus or scar indicating disease of the lung antecedent to that in the glands.

Again the same author says (*loc. cit.* p. 960), "I have seen in case after case in children, and in animals fed on tuberculous material, the lungs markedly affected, but in a large proportion of these cases it has been possible to trace the course of invasion back from a caseous or old calcareous mesenteric gland, through the chain of retro-peritoneal glands up through the diaphragm to the posterior mediastinal and bronchial glands, and so on to the lungs."

Therefore, as I have already remarked, all cases of respiratory tuberculosis must not necessarily be looked upon as primarily so, and are not all due to inhalation.

Passing from this criticism of Koch's statements, which, when all is said and done, are based on negative evidence only, we may proceed now to examine positive evidence in favour of the contention that tuberculosis may be transmitted to man from cattle.

Speaking generally, the great danger to be apprehended is from *dairy* cattle, which are kept to a large extent in ill-ventilated byres and cow-sheds, rather than from cattle kept in the open; the former being herded together under conditions favouring the transmission of disease from one to another, and its retention in a fairly constant ratio.

"In places where cattle are allowed to graze at liberty in our Alps and in marshes, uncooked milk will often be drunk with impunity; but in the low country, and in towns where the dairy cattle are always crowded together in damp cow-houses and infection spreads from animal to animal, Koch's assertion that there is no cause for uneasiness would be an invitation to

carelessness which would undo all that has been accomplished." (F. Hueppe, *Lancet*, 1901, ii. p. 613.)

As great a proportion as 50 to 70 per cent. of cattle kept under such conditions has been found affected with tuberculosis by the tuberculin test.

As to the general question, whether dairy cattle are responsible to any extent for the prevalence of tuberculosis in the human subject, we may first cite the investigations of E. F. Brush (*Archiv. Pædiatr. Philad.* 1890, p. 551), who considered the coincident geographical distribution of tuberculosis and dairy cattle.

He shows that in lands like Egypt the indigenous inhabitants retain immunity while associating for long periods with consumptive immigrants; while, on the other hand, in regions like Australia and the Sandwich Islands, the inhabitants have become infected after the introduction of dairy cattle. Referring to China, he speaks of the poor Chinese as a people who do not use milk, while the Tartars in that country are milk and meat consumers; and, therefore, the observations of medical men are very confused, and they confess that they cannot understand why the disease prevails among the dominant Tartar class and not among the poor Chinese, who, according to all preconceived notions, ought to be tuberculous.

In South America, where cattle are exceedingly numerous, but the use of milk almost unknown, or used only after being boiled, the natives enjoy still a large immunity.

Contrasting Spain and Morocco, where climate and other conditions must be nearly equal, he finds that Morocco, where there are no European dairy cows, is exempt from tuberculosis; while in Spain and Portugal, where dairying is carried on in the European style, tuberculosis prevails. He expresses a belief that dairy and beef cattle could be bred in such a way as to eliminate tuberculosis.

With such evidence, it is difficult to deny the connection between dairy cattle and the prevalence of tuberculosis.

Statistical Evidence.

The evidence of the mortality tables of the Registrar-General might be cited in support of the prevalence of ingestion tuberculosis. His returns (M'Fadyean, British Congress on Tuberculosis, 1901) show that during the last fifty years there has been a marked decline in the death-rate from human phthisis, which is the form that tuberculosis generally takes when the bacilli are inhaled. On the other hand, during the same period, there has been only a slight decline in the death-rate at all ages from

that form which is ascribable to alimentary infection, and among children under one year of age there has been a *notable increase* in the mortality from that form of the disease. The figures would seem to support the view of the importance of ingestion tuberculosis, but, as Professor M'Fadyean remarks, they do not, from various causes, such as faulty registration, and absence of *post-mortem* examinations, afford much trustworthy information with regard to the number of cases of primary alimentary tuberculosis. Still, though we depend more on other evidence, they must be referred to.

The examination of *post-mortem* records in Hospitals for Children and statistics based on these give important information.

It has been long taught and believed that, in children, ingestion tuberculosis was by far the commoner form in which the disease occurred. That this is not so has been abundantly proved by recent statistics. Of course, as I have already pointed out, these statistics, obtained from the *post-mortem* room, must not be taken as indicating the relative prevalence of inhalation and ingestion tuberculosis during life, the proportion of ingestion cases being almost certainly higher from the reasons I have already given.

In the Hospital for Sick Children in Great Ormond Street, London, Dr George Still was able to determine the channel of infection with some degree of certainty in 216 cases, and of these he refers 29·1 per cent. to alimentary tuberculosis, the bacillus entering through the intestine. In the remainder, invasion had most probably taken place through some part of the respiratory passages.

In an investigation undertaken in 1899, in complete ignorance of the simultaneous work of Dr Still, and with the same idea in view, the ascertaining of the proper proportion of inhalation to ingestion tuberculosis, and feeling that the ratio of ingestion tuberculosis had been placed too high, I examined the *post-mortem* records of the Royal Hospital for Sick Children in Edinburgh for a period of about sixteen and a half years. Out of 855 *post-mortems*, I found that 355 were for tuberculosis. Out of these 355 cases, thanks to the excellent manner in which the records had been kept by my predecessors, I was able with some certainty to make out the primary focus in 331 cases. Of these 331, I found that 93, or 28·1 per cent. had to be referred to alimentary or ingestion tuberculosis. The result shows a remarkable agreement with that obtained independently by Dr Still, and this circumstance increases its importance. In all these cases the bacilli had entered by some part of the alimentary tract, including the pharynx and tonsils.

Examining the condition of the intestine in relation to that of the mesenteric glands, the following results were brought out. Forty-five cases showed ulceration of the intestines prior to affection of the glands; twelve showed resection and matting of the glands apparently of older date than the condition in the intestine, the latter being quite healthy in five cases. (*Edin. Hospital Reports*, 1900.)

In this connection we must again quote Sims Woodhead. "In 14 out of 127 cases the mesenteric glands only were found affected. No tubercle was found elsewhere in the body. In these cases the glands had become calcified. There was no ulceration or cicatrization in the intestine; no peritonitis; no secondary tuberculosis in any other part of the body; so that the tuberculosis in the mesenteric glands must be looked on as the primary lesion." (*Lancet*, 1888.)

Again, though Böllinger and others consider the intestine very resistant to infection, "the lymphoid structures in the alimentary tract are very vulnerable. They appear to be more readily denuded of their epithelium than other portions of the tract, and in addition, lymphocytes passing into them can take with them virulent tubercle bacilli" which give rise to ulceration in the lymphoid structures, or passing through them, to tuberculous adenitis of the mesenteric glands secondary to or preceding the intestinal ulceration. (Sims Woodhead, *loc cit.*)

Böllinger also states that "tuberculosis of the peritoneal lymphatic glands occurs oftener in children than in adults, the cause for which is probably to be sought for in the feeding of young children with the milk of tuberculous cows.

Since the meeting of the Tuberculosis Congress, I have taken the opportunity of examining my records at the Royal Hospital for Sick Children, covering the past two years, from June 1899 to August 1901, and find that out of 150 *post-mortems* 43 were for tuberculosis, and of these, 11 or 25·6 per cent. were alimentary in origin, thus affording still further proof of the accuracy of the former observations. I may state that I have carefully excluded any cases in which the etiology was in the least doubtful.

In this series of 43 cases of tuberculosis it is interesting to note that all the cases of alimentary origin occurred between June 1899 and April 1901, and considering that period alone the higher percentage of 37·5 was reached. Since April there has been a run of cases of inhalation tuberculosis which has lowered the percentage to that stated.

Adding these 43 cases to the 331 cases formerly reported we have a total of 374 cases, and of these 104 or 27·8 per cent. were alimentary in origin.

Other observers furnish somewhat similar statistics. Dr Carr out of 120 autopsies on tuberculous children at the Chelsea Children's Hospital found that 16·7 per cent. showed evidence of primary abdominal infection. Dr Guthrie (*Lancet*, '99, i. p. 286), at Paddington Green Children's Hospital, found in a series of 77 cases that 26 per cent. had been infected through the intestine. (Both quoted by Dr Still, *Practitioner*, July 1901.) Kossel (*Zeitsch. für Hygiene*, bd. xxi. 3, 59) found in 14 cases of tuberculosis in children, varying in age from 1½ to 10 years, that the primary focus in 4 cases was in the mesenteric glands. There was no symptom of this during life.

Including cases of tabes mesenterica, Heller puts the incidence of ingestion tuberculosis at 50 per cent. of tuberculous affections of children; Hueppe at 25 to 35 per cent.

Brandenburg (quoted *Archiv. Pædiatr.* 1891, p. 218), in 214 cases of tuberculosis examined at the Children's Hospital at Basel, all of which were under 5 years of age, found that infection had been received in the greater number of cases by the digestive tract.

We can therefore fall back upon a considerable mass of statistical evidence, and even allowing a margin for error, which, it must be remembered, is probably more than counterbalanced by the known fact that the prevalence of abdominal tuberculosis during life cannot be limited by *post-mortem* statistics, we have here very strong grounds to go upon in refusing to accept Koch's statements with regard to this form of tuberculosis.

Clinical Evidence.

The two food materials which we have most reason to fear as vehicles of infection are the *meat* and milk of diseased cows.

It is improbable that flesh, even from cattle with very extensive tuberculosis, causes the disease in more than a very small minority of cases.

"It is known that 'Knackers,' a class of people very liable to the consumption of tuberculous meat, suffer less from tuberculosis than the general population." (Kustner, *Munch. Med. Wochenschr.* 1889.)

It is also stated that Jews suffer less from tuberculosis than Christians, and this has been explained by their greater care in the selection of meat.

Tuberculosis of muscle is very rarely met with. From experiments Nocard holds "that muscles either destroy or digest injected bacilli of tuberculosis, or at least render them innocuous." (*Nouv. dict. pratique*, 1892, p. 479.)

Most probably, as Sidney Martin points out ("Tuberculosis," "Allbutt's System of Medicine"), meat is infected by the knife of the butcher, which cuts through broken down caseous glands, and smears the tuberculous material over its cut surface. Experiments in which meat or meat-juice of tuberculous cattle have been inoculated into, or ingested by other animals, are generally productive of results so variable as to be untrustworthy; the bacilli, in the cases in which tuberculosis has resulted, being apparently derived from tuberculous foci in the intermuscular planes or in adjacent glands. Such experiments have been performed by Steinheil (*Munch. Med. Woch.* 1889), Sidney Martin (Royal Commission on Tuberculosis, 1895-6), and others.

It is quite another matter, however, where *Milk* is concerned, and much evidence in support of the virulence of tuberculous milk has been collected since Klebs and Gerlach first proposed, in 1868, that the milk of tuberculous cows may also be an agent of infection, and went so far as to hold it specially accountable for the tuberculosis of children. (*Virch. Archiv.* xliv. p. 266.)

Nocard summarises the question of infection by means of milk thus:—

1. "Milk of a tuberculous cow is virulent only when the udder is the seat of tuberculous lesions.

2. "Virulent milk is dangerous only when it contains a large number of bacilli, and is ingested in large amount."—*The dose must be large.*

3. "In practice, this danger exists only in the case of individuals in whom milk is the exclusive or chief article of diet —for example, in infants and invalids.

4. "That, to avoid the danger, it suffices to boil the milk before use." (*Nouv. dict. prat.* xxi. 487.)

Bang has found that on churning, most of the bacilli are carried off in the butter-milk (*petit lait*), but that a certain number remain always in the butter and cheese. Therefore Nocard believes that butter and cheese, even from an unknown source, may be eaten without fear, the number of bacilli being in any case small, and readily overcome in the alimentary tract.

To sterilize the milk one need not expose it to a temperature of 100° C. Bang has found that exposure to a temperature of 85° C. for five minutes kills all the bacilli—they are often killed at 80° C.; by raising the milk to 70° C. for five minutes they are not killed, and can still give tuberculosis to animals if inoculated into the peritoneal cavity, but their vitality is so profoundly affected that they are quite incapable of causing tuberculosis in animals which ingest even large quantities of milk treated in this way. The same result is obtained by heating

the milk to 65° C. for fifteen to twenty minutes. (*Nouv. dict. prat.* xxi. 488.)

The bacilli in milk may be derived either directly from the diseased cow or indirectly from the inspissated sputum of a phthisical patient, but in the latter case they can never collect in large quantities in the milk; and remembering that a large dose is necessary to convey the disease, the probability is that in most cases in which milk is to blame the crowds of bacilli have been derived directly from affected cows.

The second Royal Commission on Tuberculosis (*Lancet*, 1898, i. 1211) considered that the danger from raw milk is serious, especially in the case of infants.

Dr J. B. Russell, late Medical Officer for Glasgow, says: "The primary seat of tuberculosis in children is so frequently in the bowels and their related glands, and milk forms so large and essential an element in the food of children, that we cannot avoid the conclusion that it is to them a frequent source of infection." (Quoted by Morn, *Lancet*, Aug. 1896.)

Dr Arthur Ransome ("The Treatment of Phthisis") indicates that milk is one of the commonest sources of abdominal tuberculosis.

We shall cite only a few of the cases described in medical literature of transmission of tuberculosis from diseased cows.

Ollivier (*La Semaine Medic.* Feb. 1891) reports a very convincing experience illustrating this danger.

At a school for young girls there occurred within three months eleven cases of tuberculosis, of which five were fatal, and with many the site of infection appeared to be intestinal. Two other pupils of this same school died of tuberculosis, and in these the family history and previous state of excellent health warranted the statement that they would otherwise have escaped infection. Upon investigation it was found that during this period the school had obtained its milk supply from a cow which had shown on *post-mortem* examination advanced tuberculosis of the lungs and peritoneum, and more particularly of the udder.

Baum (*Lubarsch u. Ostertag*, 4 Jahrg. 1897, p. 868) describes several cases.

A fourteen-year-old girl of healthy parentage, quite healthy in childhood, died of tuberculosis of the larynx, ileum and cœcum, slight of lungs. It was found that she had been drinking warm milk from a tuberculous cow.

Two children of healthy parents throve until weaned, and soon thereafter died of tuberculous meningitis. The milk given was from tuberculous cows.

Another child, six months old, of healthy parents, died of

tuberculous meningitis. It had been brought up solely on milk from a tuberculous cow.

A boy, four years of age, died of tuberculosis of the abdominal glands, of the serous membranes, and of the lungs. He had been fed on warm milk from a tuberculous cow.

Johne (*loc. cit. idem*) gives a case in which one child two and a half years old, who had been fed on tuberculous milk, died of acute miliary tuberculosis. Another child of the same family, who had not been exposed to the same infection, remained sound.

Nocard describes the case of the daughter of Dr Gosse, a practitioner of Geneva. She was an apparently healthy girl of seventeen years of age. She developed tuberculosis and died in a few months. Dr Gosse was in the habit of taking his family every Sunday to a small estate in the country, and when there his daughter had always drunk large quantities of warm milk from a cow which was found afterwards to have tuberculosis of the udder.

Other cases might be referred to, but those mentioned are sufficient to show the real danger of ingestion of the milk of tuberculous cows in which the udder is affected.

Transmission by Accidental Inoculation.

It is well known that pathologists and assistants in *post-mortem* rooms often develop tuberculous warts on the fingers. It is also known that butchers develop similar warts, the infection having been received in cutting up the carcases of tuberculous cattle.

Veterinary surgeons are also occasionally inoculated in a similar way. Take, for example, Pfeiffer's case (*Zeitsch. für Hygiene*, 1888). A young veterinary surgeon received a wound of the left thumb while dissecting a tuberculous cow. It healed without suppuration, but in six months a nodule appeared in the scar, and the neighbouring joint was also involved. In about a year the lungs became affected, tubercle bacilli being detected in the sputum, and death took place two years and a half after the primary wound was received.

Nocard quotes Tscherning's case of a young veterinary surgeon who tore his finger with the scalpel while dissecting a tuberculous cow. The local signs of tuberculosis were distinct, but the spread was not so rapid as after inoculation with human material, and removal of the part saved the patient.

Ravenel (*Lancet*, August 1901) gives the cases of two men who were employed to clean cattle cars. They both received wounds of the back of the hand in doing so. These became

tuberculous, and one case ended fatally. The man was healthy, and had a good family and personal history.

Again, "a suspicion existed for some time that many of the cows composing the herd at the Kansas State Agricultural College were infected with tuberculosis. Things went rapidly from bad to worse, and when two or three of the cattle tenders were taken ill and died (of tuberculosis), the authorities took alarm and examined the herd. It was found that all were tuberculous." (*Lancet*, 1897, ii. p. 1545.)

There are only a few cases described in medical literature in which the disease appears to have been transmitted from *fowls*.

I have already mentioned one case at the end of the former part of this paper, in which a young woman was infected by eating uncooked tuberculous hens.

Dr Paterson of Glasgow gives another case. (*Lancet*, 1897, ii. p. 1107.) The wife and daughter of a poultry-keeper died of tuberculosis evidently received by eating insufficiently cooked tuberculous fowls. To prove that avian tuberculosis might infect man, he considered that cultures obtained from a patient suffering from fowl tuberculosis should show the appearance characteristic of that organism. He inoculated a rabbit intraperitoneally with pus from an abscess in such a case. At the end of six weeks, on killing the animal, he found numerous tubercles on the peritoneum. He made cultures on glycerine glucose agar and found that they developed a growth which macroscopically and microscopically exactly resembled that of avian tubercle. He unfortunately did not carry the investigation further and inoculate fowls with the culture.

Though much stress cannot be laid on Paterson's results, seeing that the investigation was not carried to its natural conclusion, and in view of the fact that cultures may vary considerably, depending on the nature of the culture media, yet his proposition that avian tubercle may preserve its characteristics to some extent, even after passing through the mammalian body, suggests a similar possibility in the case of bovine tubercle.

I have already drawn attention to the fact that in many of the cases in which inoculation of cattle with human tuberculous material was successful, "perlsucht," the presumably characteristic form which bovine tuberculosis takes, was the result, indicating that the bacilli causing the disease in man had probably been bovine in origin. And this is not all. A perusal of Creighton on "Bovine Tuberculosis in Man" (1881)—though

one cannot accept all his assertions, as some of his cases were certainly respiratory in origin—suggests an explanation of certain occasional cases of tuberculosis in man. During the recent summer I have found in three cases large, flat, glistening, fibrous tubercles covering the peritoneal surfaces. In one case these covered the whole visceral and parietal peritoneum, there being no tubercle elsewhere, and in the others they covered the diaphragmatic and peri-hepatic peritoneum. In one of the last two the history pointed distinctly to a primary ingestion tuberculosis.

Now these large nodules corresponded exactly to that form of perlsucht or "pearl" disease, which from its resemblance to duckweed has been called by the Germans "meerlinsigkeit," and the explanation would seem to be that these were veritable cases of bovine tuberculosis occurring in man.

Of course further investigation of such cases histologically, and more especially bacteriologically and tinctorially is necessary to prove or disprove their identity.

There is no reason why bovine tuberculosis should not attack man. As Ravenel says, "It cannot be denied, as a general rule, that when the virulence of a pathogenic organism is increased for one animal it is increased for all that are naturally susceptible to its action, and it is a fair assumption that bovine tuberculosis has a high degree of virulence for man as for other animals, this being especially manifest in the early years of life." (*Lancet*, August 1901.)

SURGERY

GENITO-URINARY SURGERY

By DAVID WALLACE, F.R.C.S.Ed.,

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M. LE DR PASTEAU discusses (*Ann. des. Mal. des org. urin.* April 1901) the pathological anatomy and etiology of prostatic calculi. He distinguishes two great groups—(1) those lodged in the prostatic urethra; (2) those in the prostatic tissue. Those of the first group cannot be considered true prostatic calculi, as they are only urinary calculi which have been arrested in the prostatic region. They may be at the neck of the bladder or in the prostatic urethra. When partly in the bladder and partly in the prostatic urethra they are frequently of a characteristic hour-glass shape. They are similar in composition to urinary

calculi. It is to the second group—those formed in the prostate itself—that Pasteau particularly alludes. He points out that they present two totally different forms according to where they are formed—(1) in cavities which communicate with the urethra, or (2) in the prostatic tissue cut off from direct communication with the urethra. In the first instance the calculi are of some size, and do not differ from urinary calculi in any special particular; but those in the second group, on the contrary, are quite different. They may be solitary or multiple—round when solitary, faceted when multiple—and brown or black in colour. As a rule they are not larger than a poppy seed, but sometimes they attain to a considerable size as in a case quoted by Ferreri. They may be very numerous (Golding Bird, 130). Their composition differs from that of vesical calculi, and is mainly carbonate or phosphate of chalk and magnesia with a considerable proportion of animal matter. Their etiology differs also from urinary calculi as they are shut off from the urine and are produced intra-prostatically. Various theories have been advanced to explain their mode of formation, *e.g.* condensation of prostatic secretion, amyloid degeneration. M. Pasteau compares their formation to that of salivary and biliary calculi, and believes they originate in the same way, secondarily, probably, to chronic inflammatory attacks of the prostate.

Dr Tarnaud (*Thèse de Paris*, 1901), in a study of prostatic calculi, also recognises two varieties—the urinary and the calculus of the prostate proper. He believes the latter to be a firm agglomeration of intra-prostatic concretions from the precipitation of salts of chalk in a *cul-de-sac* of the gland consecutive to a chronic inflammation of that organ. He points out, however, that these may secondarily make their way into the urethra. He states that the only characteristic signs of their presence are the crackling sensation perceived in the course of exploring the urethra, or better the crepitation detected by rectal palpation of the prostate due to the pressure on multiple concretions. Mere hardness and increase in the size of the prostate are not pathognomonic. He advises perineal incision as the operation of choice.

Goldmann (Thirtieth German Congress of Surgery) suggests the operation of anterior cystopexy in hypertrophy of the prostate. He remarks that hitherto intervention has been towards getting rid of the obstacle to micturition by attacking the posterior part of the prostate, and advances the view that the anterior part contributes to augment the condition by causing tension of the vesical neck. After suprapubic vesical puncture in a patient he left a cannula *in situ* for some days. Later the patient had improved power of micturition, and

eventually at the autopsy Goldmann found the fistula which had formed had firmly fixed the anterior wall of the bladder to the abdominal wall above the symphysis pubis. By this fixation the neck of the bladder was supported and micturition facilitated. The case suggested anterior cystopexy to Goldmann as a means of treatment in prostatic hypertrophy. The operation, he believes, not only obviates circular tension of the vesical neck by opposing vertical tension to it, but also diminishes the risk of a diverticulum forming in the posterior wall behind the prostate, *i.e.* a retro-prostatic pouch.

This observation of Goldmann's is of much interest, and is another proof of the advantage of suprapubic cystotomy, with or without prostatectomy, in the treatment of enlarged prostate, as in all such cases the bladder wall must become united through the medium of fibrous tissue to the abdominal wall suprapubically.

Ciechanowski (*Ann. des mal. des org. urin.* May 1901), in a paper on "Some observations upon the pathological anatomy of enlarged prostate," refers to work by Albarran, Halle, Lundsgaard, Motz, and Frisch, and discusses the German and French views regarding the etiology of prostatic enlargement. The former hold the view that the changes in the genito-urinary tract seen in such cases are secondary to the enlargement, while the latter believe with Guyon that hypertrophy is of secondary importance and follows a general arterio-sclerosis, which causes a fibrous degeneration or sclerosis in the kidneys, in the bladder wall, and in the prostate. To this latter view M. Ciechanowski objects and agrees with Caspar and others that hypertrophy of the prostate, and the conditions associated with it, may exist without antecedent arterio-sclerosis. In a large series of cases which he examined he found arterio-sclerosis in only a small minority. In these he examined microscopically the arterioles of the kidneys, bladder wall, and prostate, and found that hypertrophy existed with no sign of arterio-sclerosis, and, contrariwise, that arterio-sclerosis of the kidney vessels was present in some cases without any prostatic hypertrophy. He says, indeed, that renal arterio-sclerosis is comparatively rare in old men, while prostatic hypertrophy is common, and holds, therefore, that change in the vessels is not the cause of hypertrophy, and believes that the changes in the bladder wall are secondary to the hypertrophy, and consist in a change in the relative proportion of the connective tissue and muscle fibre—the former becoming relatively much increased. The greater the mechanical difficulty from prostatic enlargement the greater the change, and the greater the change in the wall the more unfavourable are inflammatory complications.

The above being granted, he says, admit that castration causes atrophy of the prostate, and we have an explanation why in some cases good results are got, while in others there is little benefit. In the first the vesical wall is contractile, and the mechanical difficulty being removed there is improvement; while in the latter, though the mechanical difficulty be removed, the bladder is still unable to act. This also, he points out, applies equally to other operative procedures.

Urotropine.—Suter (*Correspondenz-Blatt.* 1901) gives the results of experimental work with urotropine upon various organisms. A product of the combination of formaldehyde and ammonia, which is easily soluble in water, it is partly broken up into its constituents by the acids of the stomach, while a portion passes into the intestines and is absorbed. It should be given on an empty stomach, and preferably in capsules, so that it passes into the intestines, where it is broken up and absorbed.

The coli communis bacillus has a greater resistance to its action than the pyogenic organisms, but Suter experimentally proved it to be the strongest of the various antiseptics used in urinary cases. He advises its administration, prior to instrumentation, as a preventative measure to urethral fever. He thinks it is most valuable in cystitis, but where the bladder wall is much changed its action may be slow. Experience has shown that it is of little value in tuberculous and gonorrhœal cystitis, while it is very valuable in septic cystitis in prostatic or stricture cases.

GYNECOLOGY AND OBSTETRICS

HEART DISEASE AND PREGNANCY

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IT is quite evident from current medical literature and from everyday practice that there is little agreement in the profession regarding the management of various complications of pregnancy. A case in point is heart disease in pregnancy. H. D. Chadwick (*Boston Med. and Surg. Journ.*, cxlv. p. 29, July 11, 1901) has recently reported in great detail two fatal cases of mitral insufficiency in pregnant women. The first case was that of a woman, æt. 30, whose

mother had died of heart disease and whose father had died of nephritis; she had a normal first labour, but during the early weeks of her second pregnancy she suffered from bronchitis and a heart lesion was discovered. Chadwick saw her when she was five months pregnant, and found that she had then marked dyspnœa, violent cough, and profuse expectoration of a frothy, somewhat purulent kind. She was a well developed but rather fat woman; her lungs were filled with moist râles; the heart's action was rapid and there was a systolic murmur heard at the apex and transmitted to the axilla with accentuation of the second sound in the pulmonary area. Under strychnia and heroin and rest in bed she improved greatly. At the seventh month, however, dropsy of the lower part of the body developed, and there were constant headaches and nausea. She was removed to hospital where it was found that the urine was scanty and albuminous. She was treated with salines and diuretics but headaches and vomiting continued. Labour supervened between the seventh and eighth months, and with the help of forceps she was delivered of a 5½ lbs. male infant. The placenta came away in twenty-five minutes. Sharp after-pains followed, and severe headache with mild delirium, and in the evening there was a convulsion. The pulse was very weak, so strychnin and morphin were given with three pints of normal saline solution below the breasts. Cheyne-Stokes respiration followed the convulsion; there was mild delirium, a rapid weak pulse, persistent hiccough. For a week she was in a desperate condition: dropsical, with laboured respiration, and severe heart-pains. In the second week there was some improvement, the heart rate falling below 100 and becoming regular, and the dropsy lessening; but in the third week a change for the worse set in: respiration became laboured, the pulse weak and irregular, the abdomen became distended with flatus, and the mind not clear. The urine was scanty and loaded with albumin. She died twenty-one days after delivery. The second fatal case was that of a primipara of 36 years old. She had always had a winter cough and breathlessness on exertion. She had been married ten years and had suffered from vaginismus for which a urethral caruncle and hymeneal remains had been removed (by Chadwick) with cure. The operation was done under ether and there was a faint mitral systolic murmur heard at the time. Soon thereafter she became pregnant and began to suffer from nausea, vomiting, and troublesome cough. These conditions got worse at the fifth month, and there was some dropsy, a trace of albumin, and a smaller amount of urine. A pronounced mitral systolic murmur was heard, with accentuated pulmonary second sound. At the sixth month the condition was worse but the

patient would not consent to induction of abortion which was suggested. She was kept absolutely at rest; digitalis, codeine, and heroin were given; and the condition improved somewhat. At the seventh month labour pains came on, and with the help of forceps a still-born, slightly macerated fœtus was extracted. The patient showed absolute indifference to life after her delivery; the pulse went up to 110, the dropsy extended, ascites developed, and ten days after confinement death occurred during an attack of cardiac pain. The conclusion which Chadwick draws from these two cases, so similar in many points, is that mitral insufficiency in pregnancy is to be dreaded, and that when lack of compensation is shown (œdema, persistent cough) the speedy termination of pregnancy ought to be insisted upon.

In the discussion which followed the reading of Chadwick's paper (*Boston Med. and Surg. Journ.*, cxlv. p. 40, 1901), Twombly agreed that when there is uncompensated mitral insufficiency, or a loss of compensation at the fifth or sixth month of pregnancy, it was not wise to wait many more weeks unless there was very great improvement and a restoration of compensation. In general, it is wisest to deliver prematurely (always after consultation, of course) rather than wait till the distressing symptoms arise. Morse pointed out that many women had heart disease, and passed through one or more pregnancies without difficulty; he had met with a woman who had passed through thirteen pregnancies without trouble, and had died later of her mitral insufficiency without any relation to pregnancy at all. The prognosis depended much on the age of the pregnancy when the symptoms developed; the earlier they appeared, the more radical should be the treatment. Where they developed in the first two or three months of pregnancy, operative treatment would certainly be demanded; where they came on in middle pregnancy, it would almost certainly be needed; but if only in the later months there was a possibility of carrying the woman through. The mortality in babies born of women with heart disease was much greater than that of ordinary babies; they were smaller, had less vitality, and died very easily; they were not specially likely to have congenital heart disease. Boland (*Ibid.*, p. 41) had lost three cases of mitral disease in labour; two of the children died, and the only surviving child, now nine years old, was an imbecile and ataxic. In one case pulmonary œdema developed during delivery under chloroform, and the patient nearly died; in her next pregnancy premature labour was induced under ether, and again she developed pulmonary œdema, and nearly died. Boland asked, but without answering the question, what advice he was to give

to a girl in comfortable circumstances who was contemplating marrying—she had mitral insufficiency.

A case in which labour was induced for mitral disease was reported by A. H. Remington (*University of Pennsylvania Med. Bulletin*, xiv. p. 156, 1901). The patient was a partially idiotic primipara, seven and a half months pregnant. The heart was very irregular and weak, with a distinct murmur (mitral systolic?) and loss of compensation. There was dropsy of the lower limbs; the urine was acid, showed many hyaline casts, and one-half its bulk was albumin. She was put on milk diet, and her condition slightly improved under purging, hypodermoclysis, vapour baths, and heart stimulants; but at the end of ten days her heart and respiration became much embarrassed, and it was decided to induce labour. This was done by the introduction of the Champetier de Ribes bag. In twenty-four hours uterine pains began. Her condition became worse, but improved under strychnia and digitalis. A second bag was introduced, and then labour fairly set in. The membranes ruptured, and then, under chloroform, the forceps was applied with great difficulty (from rigidity of soft parts), and a child extracted very rapidly, for the patient was now cyanotic, and had a very weak and rapid pulse, and almost no respiration. The child was resuscitated. Under ergot the uterus contracted well, and the placenta was removed. There was no *post-partum* hæmorrhage. During the following day the temperature remained above 100°, and the pulse was 118. There was a complete perineal tear, which became infected; it was closed by a secondary operation some weeks after delivery, and by that time the patient's physical condition was good.

Another case, which had some special features of interest, occurred at the Clinique Tarnier, and was reported by Perret (*L'Obstétrique*, vi. 149, 1901). The patient was a ii.-para, thirty-two years of age, whose first pregnancy had ended in an abortion at three and a half months. She had a double mitral murmur, the pre-systolic being very loud, with partial compensation. There was some œdema round the ankles. She was put to bed, and on milk diet. About a week after admission she had an attack of asystoly, for which she got digitalis and caffein, and was cupped in the præcordial region. Next day Maygrier decided to induce premature labour. A Tarnier bag was introduced into the cervix, and the vagina was packed with iodoform gauze. In twenty-four hours the cervix was found dilated to the extent of $3\frac{1}{2}$ cms., and the dilator was reintroduced. The patient developed violent palpitations with a tendency to syncope; the pulse was very feeble and soft; and for the first time a trace of albumin was found in the urine.

The dilatation was now 5 cms., but the cervix was rigid; there was violent dyspnœa for which inhalation of oxygen and hypodermic injections of ether and caffein were given. There was a recurrence of the attacks of palpitation, and morphia was given; the patient was very weak. Next day the cervix was dilated digitally up to nearly 9 cms.; oxygen inhalation was continued, and injection of serum (150 gr.) was given. The pulse was very small and too rapid to be counted. Under ether the membranes were ruptured, and a living infant weighing 2720 grammes was delivered. Ether and caffein were given hypodermically. The uterus retracted well. The pulse which had been 195 fell to 160, but was still irregular. The placenta was extracted; it showed some fibroid patches due to old hæmorrhages. There was now renewed tachycardia, dyspnœa, and cyanosis; another injection of serum (500 gr.) was given, and death followed one hour after delivery. At the autopsy the auricles were found distended with blood.

F. Candia (*Archivio di ostet. e ginecol.*, viii. 164, 1901) points out that in cardiac valvular lesions in women, if there is compensation, menstruation is normal; but in the absence of compensation, irregular hæmorrhages occur due to engorgement of the right ventricle. In pregnancy, heart-complications are very dangerous, especially in labour and the early hours of the puerperium. In cases of loss of compensation, each uterine contraction leads to pulmonary stasis, and the signs of pulmonary œdema. The more difficult the labour, and the longer it lasts, the more danger there is, wherefore a premature labour, an abortion, and even a repeated labour is less dangerous than a full term first labour. In the absence of symptoms of loss of compensation the obstetrician may wait, but in their presence pregnancy must be interrupted by the best and most rapid means, more especially if the want of compensation has existed from the beginning of the pregnancy. F. Cavacini (*Archivio di ostet. e ginecol.*, viii. 297, 1901) has used the Tarnier dilator in two cases of the dyspnœa of uncompensated cardiac disease; in one case the mother recovered, in the other she died; in both instances the fœtus was dead. In the successful case the condition was not so grave as to call for great haste, so dilatation was begun by means of Barnes' bags; but as the dyspnœa increased and became dangerous, the labour was completed by the Tarnier dilator in an hour and a half. The fatal case was one of mitral insufficiency with right-sided lobar pneumonia; there was cyanosis, dyspnœa, and pulmonary œdema. Dilatation was rapidly carried out with the Hegar, the Krause, the Mauri, and the Tarnier dilators used in succession. The pregnancy was at 5½ months, and dilatation could not be

obtained in less than six hours, and the patient died. Cavacini says it was really premature labour induced in *articulo mortis*. The case, however, gives another illustration of the uncertainty and danger of induction of premature labour in heart lesions complicating pregnancy.

DERMATOLOGY

THE DERMATOLOGICAL SECTION AT CHELTENHAM

By NORMAN WALKER, M.D., F.R.C.P.Ed.

THERE was some dubiety among some of the members whether it were possible for the dermatological section to be a success in so small a town as Cheltenham. The results, however, more than justified the experiment, and it is doubtful whether a more interesting meeting of the section has ever taken place.

The principal business was the discussion of the three subjects which may be said to be most prominent at present in the dermatological mind. Sabouraud had come over from Paris to introduce the discussion on the rôle of staphylococci and streptococci in the etiology of skin diseases. In an interesting paper, read in French, but of which a full abstract was supplied to the members, he took the position that there were three varieties which played an important part in cutaneous pathology.

The streptococcus of Fehleisen is the cause of the impetigo contagiosa of Tilbury Fox. This may be said to have been pretty generally accepted. Gilchrist of Johns Hopkins and most of the active cutaneous pathologists have verified Sabouraud's work, and in Edinburgh, too, I have found that in the majority of cases of impetigo one could get cultures more or less pure of streptococci. Unna remains an opponent of this theory, maintaining that the disease is due to a staphylococcus, and he has published several papers supporting his views.

It is certainly very remarkable that an organism so virulent as the streptococcus should be responsible for such a benign disease as impetigo, but Bullock and others have demonstrated the infinite varieties of virulence associated with this organism.

The organism second in importance according to Sabouraud is the staphylococcus aureus which produces pustular lesions upon the skin, generally he says perifollicular. It is responsible for a formation of boils, and, indeed, this staphylococcus may be said to be responsible for most of the purulent skin affections.

The third organism is a white coccus, for which Sabouraud

suggests the name of the staphylococcus cutis communis. As it is obviously and admittedly the organism described by Welch of Baltimore as the S. epidermidis albus, it seems a pity to rechristen an already baptized child. According to Sabouraud, this organism is found in almost every skin, indeed, is the most common organism there found. It is the one which Unna has described as the morococcus, and Sabouraud believes that it is responsible for all the scaly eruptions. Malassez spores (Unna's flask bacillus) is, according to him, only a degenerated form of this micrococcus.

Sabouraud was followed by Galloway, who held that even greater simplicity might be introduced; practically he recognised only a streptococcus and a staphylococcus, for he believes the production of colour to be of only minor importance as a distinction. He regards the S. epidermidis albus as practically the same as the common S. albus, and pointed to the extraordinary variance in virulence of the streptococcus as being much greater than that which it was necessary to assume in these staphylococci. Whitfield maintained the distinction between the S. epidermidis albus and the S. pyogenes albus, the latter of which liquefies gelatine very rapidly, the former very slowly, if at all.

The determining of differences between the numerous varieties of cocci found in the skin is undoubtedly extremely difficult. While Galloway stands at the one extreme, Unna may be placed at the other in recognising minor distinctions of colour, rate of liquefaction, chemical reaction and the like as indicative of important differences in the organisms. The reactions of the skin vary so greatly in different conditions that it seems quite possible that these are associated with what may be minor, but still are important differences between different species of staphylococci. It was somewhat remarkable to note that both Sabouraud and Galloway, while dwelling on the importance of these organisms in many conditions, were both extremely anxious to make it clear that in their opinion the lesions of eczema were amicrobic.

It cannot be said that much came of the discussion beyond the acceptance of the relationship between the streptococci and impetigo contagiosa, but many ideas were suggested, and will, doubtless, form useful guides to work which may lead to more definite conclusions at the meeting next year in Manchester.

On Thursday the section was crowded to hear the discussion on the different forms of light treatment. This was introduced by Mr Malcolm Morris, fresh, or, perhaps, one should say fagged out, from his busy week as Secretary-General of the Tuberculosis Congress, who briefly put before the meeting his

experience in reference to the Finsen method of treatment. He was good enough to distribute reports of an article which appeared some time ago on the subject; so that one could follow his views at leisure.

He is a firm but not rabid believer in the new method of treatment, and he showed some patients and illustrations which demonstrated even to the most sceptical the value of the treatment. The advantages of the method were, he said, its reliability, its painlessness, and the excellent cosmetic results. The disadvantages were the long time required for treatment and the expense, which I am told by one thoroughly experienced in treating large numbers of cases works out at between 6s. and 7s. per patient per day.

Mr Morris was followed by Dr Sequeira, who is in charge of the Light Treatment at the London Hospital, and he gave the excellent statistics of his experience, for the London Hospital has the largest installation in this country; one lamp having been presented by the Queen, one by the Directors, and the third by the proprietors of the *Daily Mail*. Each of these is capable of treating four cases at a time, and thus between sixty and seventy patients are treated daily. It is unnecessary to give any further details as to their statistics, for the success of this method is admitted. What has militated against it is its enormous expense, but Dr Sequeira demonstrated an apparatus with which they had had at least as successful results, and which was procurable at a cost within the reach of any small provincial infirmary. It is a modification of an apparatus designed by M.M. Lortel and Genoud, and it is undoubtedly greatly improved by the English modification.

Finsen commenced his light treatment by using the sun, and since the sun is as rare in Copenhagen as it is in this country, he was driven to electric light as a substitute. Imitating too closely his example, he hung his imitation sun up in the middle of the room and focussed the rays down on the patient. The French inventors place the patient and the light close together, and thus the costly and cumbersome arrangement of rock crystal lenses is dispensed with. The apparatus consists of a small arc lamp, such as is used in an electric magic lantern, which is kept cool by a constant stream of water; the whole is surrounded by a water jacket, and Dr Sequeira has so arranged his modification of the Frenchmen's apparatus that one stream of water suffices to keep the whole cool. The extent of surface treated at a time is nearly four times as great as that treated by Finsen's apparatus, and the desired effect is produced in something like one-third of the time.

A still cheaper apparatus was shown in the Exhibition by

the Dowsing Radiant Heat Company, but it had not the advantage of universal mobility which Dr Sequeira's apparatus has.

Dr Brooke spoke on the advantages of the Finsen method, and with him apparently the limit of personal experience in this country was reached.

The discussion then drifted on to the X-ray method, or rather Dr Sequeira concluded his remarks by a reference to it. To him belongs the credit of having, partly by accident, discovered the extraordinary effects of the X-rays in rodent ulcer. A case was sent to him by Mr Jonathan Hutchinson, junior, for the purpose of treatment by Finsen's method. (It should be mentioned that Finsen has treated several cases of rodent ulcer by his method.) The parts were so sore that Dr Sequeira hesitated to use the method, and thought it well to try the effects of the X-rays as a preliminary treatment. The results were surprising, the ulcer healed up, and since then many cases have been treated in different parts of the country, and when the rays are properly applied, with invariably marked benefit. The improvement worked by this treatment almost requires to be seen to be believed, especially when one remembers that it is efficacious not only in the slight cases, but also in those which are far, far beyond the reach of the surgeon.

There were present a considerable number of X-ray experts, who discussed the matter from the standpoint of the electrician. There seemed to be a general accord that hard tubes had a more excellent therapeutic effect than soft, which were more liable to cause dermatitis.

Dr Blacker, who followed Dr Sequeira, and who speaks with authority as an expert electrician, was extremely discreet in his praise of the method, and formed an admirable contrast to some writers who are apparently of opinion that in the X-rays has been found a panacea for each and every disease, not only of the skin but of the other organs as well. In speaking on the discussion I took occasion to point out that while a firm believer in the efficacy and usefulness of both the methods of light treatment, that their combination with the older and familiar methods was likely to be followed by much more rapid cure than when slavish devotion to the new methods excluded all other treatment.

In my own experience the rays are the most suitable treatment for the very widespread cases of lupus. They are the only treatment suitable for extensive rodent ulcer, but in more limited cases of lupus, where the appearance has to be greatly considered, then the Finsen method, with its extremely perfect scar, is to be preferred.

On Friday the discussion was on Seborrhœa, and was opened by Colcott Fox, who gave a historical resumé of the subject, interesting and suggestive as his communications always are. He was followed by Sabouraud, who gave a demonstration of plates and lantern slides of his illustrative views on the subject.

He defines seborrhœa as a hyper-secretion of the sebaceous glands, and he believes this to be due to the growth of a specific bacillus, which may be found in very large quantities in the little greasy plugs to be found in the mouths of the glands. He says: "Seborrhœa (in its etymological sense—flow of sebum) is the hyper-secretion of the sebaceous gland. It is only this: seborrhœa is never scaly, it is always and exclusively fatty."

This quotation illuminates the difficulty one had in discussing the paper. It is all very well for Sabouraud to say that other views, and he certainly did not spare some of the distinguished investigators on the subject, are incorrect, but by taking back the word to its etymological sense, he begs the whole question. These other observers may be wrong, but it still remains the fact that the term seborrhœa is commonly and generally applied to the scaly eruption on the scalp which is known as dandruff, and when Sabouraud says that Unna is wrong in attributing any importance to his morococcus as a cause of seborrhœa, and in another place that the S. cutis communis, which he believes to be Unna's morococcus, is the cause of all scaly eruptions, it would seem that they are not so very far apart after all.

Leaving aside names for the moment, one may briefly summarise Sabouraud's views as follows: that there is a minute bacillus, which growing in the mouths of the sebaceous glands stimulates them to produce an abnormally fluid secretion. In severer cases the mouth of the gland is plugged, and we have the disease known as acne, and he believes that all forms of acne are due to this organism, plus, in the suppurating cases, the staphylococcus aureus.

Unna on the other hand regards the morococcus as the principal pathogenic agent, and seeing its power of producing scaling admitted by Sabouraud, which is after all a mild form of inflammation, it seems a likely enough candidate for the honour of being the cause of the disease.

Cultivation of this organism of Sabouraud's is difficult. In many efforts I have only once succeeded in getting a colony in any way resembling those he demonstrated at Cheltenham, but as he was good enough to give me a couple of his tubes, I trust to be more fortunate in future. They require an acid medium, and the growth is of a dirty red colour.

The whole subject requires elucidation. Until authors are agreed as to the meaning to be attached to a particular name, it is obviously useless discussing it. Sabouraud's seborrhœa ends in acne, Unna's in psoriasis, and it would surely be well to have as hard and fast a line as possible drawn between two such obviously dissimilar diseases.

This subject too is one which might well be thrashed out again at Manchester.

Editorial Notes and News

The Assassination of President M'Kinley.

LANGUAGE fails to adequately express the feeling of detestation with which the Anglo-Saxon peoples received the news of President M'Kinley's assassination. The Head of a Great Free People, whose land affords an asylum even to ruffians hounded out of Europe, struck down when engaged in extending the right hand of fellowship and social greeting to all who chose to come, is an outrage upon every sentiment which surrounds public and private life as well as an incalculable injury to a great nation. This detestation has found expression in messages of what we call sympathy. By whatever name it may be called we can assure our brethren in America that we experience and share all the deep feelings which the dastardly crime has aroused in them. We belong to those who hold that anything which deeply touches either section of the Anglo-Saxon people reverberates in the other, and there is no doubt that the news of the foul deed was felt in this country as a family outrage would be felt. It was a gross insult to all the Anglo-Saxon love of Liberty, Social Order, and Justice, and deliberately committed against the head of the house. It was a racial outrage, and whenever that is the case the Atlantic is no dividing line. Our heartfelt sympathy goes to the widowed lady who mourns the loss of a devoted husband, and to colleagues who found in Mr M'Kinley a high-minded leader and a Christian gentleman.

The Treatment of Anarchists.

THE assassination of their President has rudely opened the eyes of Americans to the teaching of the Anarchists, and in this enlightenment the people of Britain may also claim a share. On both sides of the Atlantic there is the same strong belief in freedom of thought and speech, in toleration extended to all *isms* and *doxies*,—to all fanatics, whether their hallucinations

refer to tobacco, to alcohol, to therapeutics, or to experimental medicine; no doubt the toleration is more or less cynical or contemptuous, but no one suggests, or even dreams, that strong measures are to be taken to keep fanatics from their own follies. People are allowed to believe what they like, and very much to say what they like. This kind of toleration is now indigenous in the race. But it seems to us that this practice of toleration can be carried too far, and we are disposed to think that it has been so carried in connection with the Anarchists. A freedom which is questionably wise has hitherto been allowed to their teaching and to their literature. Immoral literature is suppressed, and we hold that any literature which prompts to personal violence ought in the same way to be suppressed, and the authors of it punished. We strongly believe in the deterrent influence of some kinds of punishment; and we do not believe that the death-penalty is such a powerful deterrent as some people think. To die is easy; and there are multitudes of people ready to die for their country, their families, or their principles if necessary. Such a creature as shot the President values his life no more than the Buffalo mob would have valued it; and its probable loss is not a matter of much concern when crime, prompted by ignorant fanaticism, is contemplated and decided on. Civilisation has so refined even the death-penalty that it shudders if death has not been instantaneous; it is not therefore painful to die by the hands of the executioner: we all know, and have seen, many more painful modes of dying than that. We therefore think the death-penalty quite inadequate. We have, on the other hand, a great respect for the influence exerted by the dread of physical suffering; we remember how the *cat* put down garrotting, and we have recollections of the ruffians who committed those crimes groaning aloud when the sentence was pronounced upon them. We quite agree that the *cat* was used too freely and for absurdly trivial offences in the past. It has gone out like blood-letting; but like blood-letting it has its own place, and a very useful place. The position we would submit as a reasonable one is that *all* deeds of unprovoked personal violence should be punished by flogging; that when the culprit is caught in the act there should be but little time lost before the punishment is administered. When unprovoked killing is attempted, or much personal injury done, we are strongly of opinion that punishment should be what is commonly called cruel, and that in the former case the death-penalty should also be exacted. We think it a misfortune that this American murderer could not have been so treated instead of leaving him in confinement to develop a stubborn, sulky silence. It might be in the interest of the State to unseal his lips, and we doubt not

the *cat* would open them. As law at present stands a ruffian like this can die defiant. Let it be understood that we are not advocating any return to the barbarous tortures of the past, and that we should confine severe flogging to such crimes as we have indicated. We have been surprised at the tone of hopelessness in the *Spectator* and some other papers, and are much more in sympathy with the *Lancet*, and agree that this viperous brood has to be crushed and stamped out as a pestilence is. Freedom of thought and speech are not lightly to be surrendered, but freedom is taken advantage of to advocate deeds which in their very nature interfere with and even tyrannically restrict freedom. We think that the new century promises to open the eyes of people to the perniciousness of some of the sentimentality with which at one time it almost looked as if we were to be overwhelmed.

Our Friends in the West.

OUR friends in the west of Scotland have had a stirring summer; and our friends in the east have been casting admiring glances, and have even been giving audible expression to their admiration of the *éclat* with which things in the west have been carried through. Glasgow has excelled herself and has left a record of which she may well be proud: plague stamped out, small-pox conquered, and a splendidly successful Exhibition in spite of doleful prognostications. They have also had the wisdom of the British Association, the war-dances of the Peace Congress, eye-opening Trades Unionism, and many minor attractions. Even the doctors must have had their ordinary holiday arrangements interrupted and interfered with. With the advent of October things take on autumnal colouring, and we have all begun to think of the winter's work and its more serious duties.

The Royal Commission on Tuberculosis.

THE personnel of this Commission is excellent. We wish, however, to draw attention to the fact that a Commission on Tuberculosis has been appointed without apparently it being felt that there was any one man in Scotland who could not be done without. We don't know if any person in Scotland was asked to join the Commission; in fact, we assume the contrary, and that is why we draw attention to it. We have in Scotland four Professors of Pathology, and not one of them has been a necessity at this juncture. It is not flattering to Scotland, but it does not follow that it is unjust. We wonder if the Carnegie

bequest will alter this level of things? Apropos of this Commission, America might use the condemned anarchist for experimental purposes and make him thus serve the cause of humanity.

Direct Representative on the General Medical Council.

DR BRUCE, Dingwall, has intimated his intention to apply for re-election. There has been some talk of opposition, but it will be difficult to arouse the profession even by a contest from their present apathy. There are always reforms wanted, more or less, but if we gauge the feeling aright it is this—that under the present constitution the Direct Representatives have so little power that if they were all as "bonny fechters" as Mr Victor Horseley it would only make the proceedings of the Council more entertaining reading, and have no other practical benefit.

Obituary

Dr William Husband, F.R.C.S.Ed.

BY the death of this excellent man, on August 20th, the profession has lost one of its oldest members—and Edinburgh one of its most respected citizens. Born in Dunfermline in 1815, William Husband was son of the Reverend Dr James Husband of Queen Anne Street Church, and after his father's death he came to Edinburgh for his education. He attended the High School and was one of the band of pupils who marched in procession from the old building in Infirmary Street on the occasion of the opening of the present beautiful building on the Calton Hill.

After a successful career in Arts at Edinburgh University, in which he was specially distinguished in Classics and Natural Philosophy, he graduated M.A. in 1837. He then for some years studied Divinity before finally taking to Medicine. He took his M.D. in 1846, was appointed a parochial medical officer in 1849, and superintendent of the Vaccine Institution in 1867. He became a Fellow of the Royal College of Surgeons in 1853. From the day he commenced practice in Edinburgh his life was full of useful work—done both in quietness and simplicity. No man was less of a "pusher." He knew none of the art of self-advertisement. His parochial work was done kindly as well as thoroughly. The chief contribution to the scientific progress of the profession was his invention of the capillary tube, so easily filled and sealed for the reception and storage of vaccine virus.

He was an enthusiast in the practice of vaccination and a most successful teacher of its principles and its technique.

Dr Husband was a deeply religious man. There was a remarkable humility and modesty in his character which kept him out of strife of church courts, or public appearances on platforms, but his quiet work as an elder in Free St George's was well known to, and appreciated by his minister. He greatly enjoyed the preaching of Dr Candlish, who admitted him to the eldership in 1865. At his death he was senior member of the Kirk Session of Free St George's Church. After a life of wonderful health and quiet vigour, his last illness was short, attended by failure of digestive powers. He was seriously ill for only a fortnight.

He is survived by his widow, three sons and four daughters.

J. B.

Medical Education in Scotland

The Universities

FOUR degrees are conferred by the Universities, viz., Bachelor of Medicine and Bachelor of Surgery (M.B., Ch.B.) and Doctor of Medicine and Master of Surgery (M.D. and Ch.M.). The degrees of M.B. and Ch.B. must, however, be taken together and at the same time. The higher degrees of M.D. and Ch.M. are conferred separately.

PRELIMINARY EXAMINATION.—This must be passed before the medical course is entered upon. The subjects of examination are:—

(1) *English.*—Two general questions are put, dealing with any period of British History. Two questions are asked in geography and four in grammar, which includes correction of sentences, parsing, analysis, and derivation. The candidate is required to write an essay and do a paraphrase, while two questions of a literary and general kind are asked. Eight questions must be answered, and these must include one in history and one in geography, the essay and the paraphrase.

(2) *Latin.*—Translation, Parsing, Grammar, Composition, and Sentences.

(3) *Elementary Mathematics.*—This includes (*a*) Arithmetic —vulgar and decimal fractions, proportion, percentage, square root, simple interest. (*b*) Algebra—fractions, factors, square root, equations of the first degree, simultaneous equations of the

first degree, easy quadratic equations and problems leading to these. (*c*) Geometry, Euclid (Books I., II. and III., or their equivalents), with easy deductions.

(4) *Greek, or French or German.*

Greek.—Translations, sentences, grammar.

French or German.—Grammar, translations from English and from French or German, sentences of idiomatic character, literary or historical questions.

All these subjects must be passed at two examinations. Exemption from this preliminary examination, wholly or in part, is afforded by the candidate having obtained the Leaving Certificates of the Education Department or by the possession of an Arts or Science degree of any University. Other examinations passed by the candidate and exempting him from the medical preliminary examination are fully detailed in the University Calendars.

Dates of Examination.—Two examinations are held yearly; in October and April.

The fee for examination is half a guinea.

REGISTRATION BY THE GENERAL MEDICAL COUNCIL.—Every medical student must register within fifteen days of commencing medical study, *i.e.* he must have his name entered on the official Register of Medical Students kept by the Council. (Mr James Robertson, 54 George Square, Edinburgh.) After 1901 candidates for registration must produce evidence that they have attained sixteen years of age.

No other examination than the preliminary is necessary before registration.

MATRICULATION.—Students become members of the University by entering their names in the Matriculation Album.

Every student must sign the Matriculation Album each year and pay the matriculation fee, as also the fees of the classes he proposes to join, within fifteen days from the beginning of the session. (For admission at a later date an additional fee of 5s. is payable.)

The matriculation fee for the whole year is £1, 1s., and for the summer session alone, 10s. 6d.

Edinburgh University Professional Education

The following is a brief summary of the order in which the classes should be attended. If the student begins in the summer—

First Summer.— Elementary Botany and Zoology.
The examination in those should be taken in July as part of the First Professional Examination.

First Winter.— Chemistry, theoretical and practical.
Physics (3 months course).
Lectures on Anatomy.
The examination in Chemistry and Physics should be taken in March as the remainder of the First Professional.

Second Summer.—Practical Anatomy and Practical Physiology.*

Second Winter.— Physiology,* (Lectures and practical work).
Practical Anatomy.
Surgery, Hospital and Clinical Surgery (*after Christmas*).

Third Summer.—Practical Anatomy and Practical Materia Medica.
Clinical Surgery and Surgical Ward Work.

Third Winter.— Practical Anatomy.
Anatomical Demonstrations.
Lectures on Materia Medica.
Clinical Surgery and Ward Work.
The examination in Anatomy and Physiology should be taken in March.

Fourth Summer.—Lectures on Medical Jurisprudence and Public Health.
Practical Pathology. *Post-Mortem* Examinations.
Clinical Medicine and Dispensary Work.
The examination in Materia Medica may be taken in July.

Fourth Winter.— Lectures on Pathology, Medicine, Midwifery and Diseases of Women. *Post-Mortem* Work.
Clinical Medicine and Ward Work. Dispensary.
The examination in Pathology and Medical Jurisprudence should be taken in March.

* In addition to the five months systematic course on Physiology, the following courses on Practical Physiology are given. Winter Session: (1) *Practical Experimental Physiology*—Every week-day except Saturday, from the middle of October to the end of January; 10 A.M. to 12 noon. Fee, £2, 2s. Each student to attend on one day in the week only. (2) *Practical Chemical Physiology*—Every week-day except Saturday, from the middle of October to the end of January; 10 to 11 A.M. Fee, £1, 1s. Each student to attend on one day in the week only. Summer Session: *Practical Histology*—Each student to attend for two hours on four days a week from beginning of May. Fee, £2, 2s.

Fifth Summer and Winter—
Forensic Medicine and Public Health.
Clinical Medicine and Surgery.
Mental Diseases, Ophthalmology, Diseases of Children, Ear and Throat, and Skin.
Fever Hospital, Midwifery Cases, and Dispensary.
Vaccination, Operative Surgery.
The final examination is to be taken in April, May, and June.

The course of instruction in Clinical Medicine and Clinical Surgery must each have extended over a period of not less than nine months, and attendance at the Infirmary or hospital must be for not less than three years.

The candidate must have attended twelve cases of Midwifery under the superintendence of a qualified practitioner. If, however, he has attended for three months the practice of a Maternity Hospital six cases will be deemed sufficient.

In order to obtain a University degree two of the five years of medical study must have been passed at the University of Edinburgh, or, of the compulsory subjects of study, not less than eight must have been taken in the University.

Women students may obtain the University degrees, but are not taught in any of the University classes. The Medical College for Women, Minto House, is the college recognised by the University for the education of women who intend to graduate at the University.

Professional Examinations for M.B. and Ch.B.

The candidate is examined both in writing and orally and practically where possible.

First Examination.—Botany, Zoology, Physics, Chemistry.
Second Examination.—Anatomy, Physiology, Materia Medica and Therapeutics.
Third Examination.—Pathology, Medical Jurisprudence, and Public Health.*
Fourth Examination.—Medicine and Clinical Medicine, Surgery and Clinical Surgery, Midwifery, Medical Jurisprudence and Public Health.*

* After 1902 the examinations in Forensic Medicine and in Public Health will be held in the final examination only.

If the candidate fails in one or more subjects of each examination it does not disqualify him from passing in the other subjects of that examination. No candidate can obtain these degrees until he has obtained the age of twenty-one years.

The total expense incurred in paying class fees and examination fees for the degrees of M.B. and Ch.B. amounts to from £130 to £150.

Degree of M.D.

This degree is conferred on those who already possess the M.B. and Ch.B. degrees. The candidate must be at least twenty-four years of age, and must have been engaged in general practice for two years. If, however, he has been engaged in the medical wards of an infirmary, or in scientific research, or in the military or naval services, then one year is deemed sufficient. He must pass an examination in Clinical Medicine and in some of its special departments, and must present a thesis written by himself and dealing with a medical subject.

Degree of Ch.M.

Candidates must possess the degrees of M.B., Ch.B., have attained the age of twenty-four years, and must have worked for one year in the surgical wards of an hospital or alternatively as above described. He must pass an examination on surgical anatomy, operations on the dead body, clinical surgery and its special branches. He must also submit a thesis dealing with a surgical subject.

Fees for the Professional Examinations

For the first, second, and final examinations six guineas each; four guineas for the third; while ten guineas is the fee for each of the higher degrees of M.D. and Ch.M. For re-examination the fee is one guinea for each subject, and five guineas for the M.D. or Ch.M. examination.

DEGREES IN PUBLIC HEALTH

Two degrees are granted by the University of Edinburgh in the department of Sanitary Science, viz., B.Sc. and D.Sc.

Bachelor of Science

Candidates must be graduates in Medicine of a University of the United Kingdom or of some other recognised University. In order to obtain the degree two examinations have to be passed.

First Examination.—Before entering for this examination, the candidate must, after graduating in Medicine, have worked in a recognised Public Health Laboratory for eight months, of which five consecutive months must be passed in the Public Health Laboratory of the University of Edinburgh.

He must also have attended in a Scottish University a course of lectures on Physics and a course of lectures on Geology, extending *over* three months, and both of which are approved of by the University Court.

The subjects of examination are as follows :—

(1) *Laboratory* work—Practical, written and oral; examination of water, air, foods, beverages, condiments, sewage ; soils ; disinfectants ; building materials ; clothing ; bacteriology.

(2) Physics. (3) Geology.

Second Examination.—This cannot be taken until eighteen months after graduating in medicine ; nor sooner than six months after passing the First B.Sc. Examination. The candidate must have attended two separate courses in Public Health, either in the University of Edinburgh or in some other recognised University or School. Each course must consist of forty lectures, and include Medicine in its relation to Public Health and Sanitary Engineering.

The candidate must likewise produce evidence that (1) for six months he has studied sanitary work under a Medical Officer of Health for a county or borough of not less than 25,000 inhabitants ; (2) that he has studied clinically for three months infectious diseases in a recognised institution ; (3) that for three months he has been instructed by a recognised teacher in mensuration and drawing.

The subjects of examination are :—

(1) Sanitation ; (2) Sanitary Law ; (3) Vital Statistics ; (4) Medicine in relation to Public Health.

The candidate is examined orally, practically, and by a written paper. *Sanitation* includes making reports on dwellings, workshops, hospitals, and sanitary schemes generally.

The University Court may modify the work and instruction prescribed from time to time.

Doctor of Science

A graduate after having held the degree of B.Sc. for five years may present himself for the D.Sc. He must present a thesis, the result of his own research, or a published work or memoirs, and must pass an examination in Public Health, and in such of its special subjects as the Senatus may determine.

The candidate must submit the subject in which he proposes to be examined for approval not less than two months before the examination.

FEES PAYABLE.—First and second examinations, £3, 3s. each; for D.Sc., £10, 10s.

Institutions for Clinical Instruction in Edinburgh

Royal Infirmary. Over 700 beds. Fees—perpetual ticket, £12; or one year, £6, 6s.; six months, £4, 4s.; three months, £2, 2s. Clinical instruction is given daily in all the branches of Medicine and Surgery by many teachers.

Royal Hospital for Sick Children. 84 beds. 700 in-patients yearly.

Royal Maternity and Simpson Memorial Hospital. 300 in-patients yearly.

City Hospital for Infectious Diseases. 400 beds.

Royal Asylum, Morningside. 500 beds.

Many Dispensaries for General and Special Diseases.

Professors and Lecturers in Edinburgh

From the following list of teachers, the student may select those whom he considers to be the most desirable instructors. The courses given by the Extra-Mural Lecturers are recognised as qualifying for graduation by the University of Edinburgh and by other examining boards.

Anatomy— Professor Sir Wm. Turner, M.B., F.R.S., University
R. J. A. Berry, M.D., New School.
J. Ryland Whitaker, M.B., Surgeons' Hall.

Botany— Professor I. Balfour, M.D., Botanical Gardens.
A. N. MacAlpine, B.Sc., Minto School.
Robert Turnbull, B.Sc., New School.
J. A. Terras, B.Sc., Teviot Place.

Chemistry— Professor Crum Brown, M.D., University.
W. Ivison Macadam, F.R.S.E., Surgeons' Hall.
A. P. Aitken, D.Sc., Royal Veterinary College.
Dr Readman, 4 Lindsay Place (Practical and Analytical).
T. W. Drinkwater, Ph.D., Chambers Street.
John Hunter, F.I.C.

Practical Chemistry (alone)—
J. Falconer King, F.C.S., Minto House.
J. B. Readman, D.Sc., 4 Lindsay Place.
G. H. Gemmell, 4 Lindsay Place.
Zoology— Professor Ewart, M.D., University.
A. T. Masterman, D.Sc., New School.
Biology— R. Turnbull, New School.
Physics— C. G. Knott, D.Sc., University.
Dawson Turner, M.D., Surgeons' Hall.
Physiology— Professor Schäfer, M.D., University.
D. Noel Paton, M.D., Surgeons' Hall.
Pathology— Professor Greenfield, M.D., University.
W. Russell, M.D., Medical College for Women.
Theodore Shennan, M.D., Surgeons' Hall.
Stuart M'Donald, M.D., New School.
Materia Medica and Therapeutics—
Professor T. R. Fraser, M.D., University.
William Craig, M.D., Surgeons' Hall.
Lockhart Gillespie, M.D., New School.
Medical Jurisprudence and Public Health—
Professor Sir Henry Littlejohn, M.D., University.
Harvey Littlejohn, M.D., Surgeons' Hall.
Aitchison Robertson, M.D., New School.
Surgery— Professor J. Chiene, M.D., University.
F. M. Caird, F.R.C.S.E., New School.
J. W. B. Hodsdon, F.R.C.S.E., Surgeons' Hall.
J. Shaw M'Laren, F.R.C.S.E., New School.
H. Alexis Thomson, F.R.C.S.E., Minto House.
David Wallace, F.R.C.S.E., Nicolson Square.
A. Miles, F.R.C.S.E., Med. Col. for Women.
Clinical Surgery—
Professor Annandale, F.R.C.S.E., Royal Infirmary.
C. W. Macgillivray, F.R.C.S.E., „
J. M. Cotterill, F.R.C.S.E., „
C. W. Cathcart, F.R.C.S., „
F. M. Caird, F.R.C.S.E., „
Practice of Physic—
Professor Wyllie, M.D., University.
Alex. James, M.D., New School.
Byrom Bramwell, M.D., New School.
G. A. Gibson, M.D., Minto House.
R. W. Philip, M.D., New School.
R. A. Fleming, M.D., 27 Nicolson Square.
Graham Brown, M.D., New School.
Alexander Bruce, M.D., Surgeons' Hall.

Clinical Medicine—
The Physicians of the Royal Infirmary.

Midwifery and Diseases of Women—
Professor A. R. Simpson, M.D., University.
J. Halliday Croom, M.D., Minto House.
D. Berry Hart, M.D., Surgeons' Hall.
J. W. Ballantyne, M.D., Medical School for Women.
A. H. F. Barbour, M.D., New School.
R. Milne Murray, M.D., New School.
F. W. N. Haultain, M.D., New School.
J. Haig Ferguson, M.D., New School.

Insanity— T. S. Clouston, M.D., University and Royal Asylum.
Sir J. Batty Tuke, M.D., Surgeons' Hall.

Diseases of the Eye—
G. A. Berry, M.B., University.
G. Mackay, M.D., Surgeons' Hall.
W. G. Sym, M.D., New School.

Vaccination— (*Vacant*) Royal Public Dispensary, Richmond Street.
J. B. Buist, M.D., Western and Cowgate Dispensary.
Francis Cadell, F.R.C.S.E., New Town Dispensary, Thistle Street.

Diseases of Children—
The Physicians and Surgeons of the Sick Children's Hospital.
John Thomson, M.D., New School, Bristo Street.

Diseases of the Skin—
W. Allan Jamieson, M.D., Royal Infirmary,
Stewart Stirling, M.D., Surgeons' Hall.
Norman Walker, M.D., Royal Infirmary.

Diseases of the Ear, Nose, and Throat—
P. M'Bride, M.D., Royal Infirmary.
G. Hunter Mackenzie, M.D., Eye, Ear, and Throat Infirmary.

Systematic Gynæcology—
N. T. Brewis, M.D., 27 Nicolson Square.

Bacteriology—J. Taylor Grant, M.D., 4 Lindsay Place; and the Professor and Lecturers on Pathology.

Glasgow University

The medical curriculum at the University extends over five years, and the classes are held in the handsome buildings at Gilmorehill, adjacent to which lies the Western Infirmary, where there is an excellent field for clinical and practical work.

The Faculty of Medicine embraces the classes of Botany, Zoology, Physics, Chemistry, Anatomy, Embryology, Physiology, Materia Medica and Therapeutics, Pathology, Medical Jurisprudence and Public Health, Surgery, Clinical Surgery, Practice of Medicine, Clinical Medicine, Midwifery, Insanity, Diseases of the Eye, Diseases of the Ear, Diseases of the Throat and Nose, Diseases of the Skin, and Diseases of Children.

The cost of the medical curriculum is about £126.

Before the commencement of medical and surgical studies the preliminary examination has to be passed. The names of candidates for this examination must be given in and the fee of 10s. 6d. paid to the assistant clerk at the Matriculation Office. At the Matriculation Office successful students can obtain the registration forms which must be filled up and sent to 48 George Square, Edinburgh.

The University of Glasgow offers many attractions to students. The professional chairs are occupied by able men, some of them of world-wide renown; and in the Western Infirmary with the recent additions to its surgical theatres, and its excellent pathological laboratories and museum, a splendid field of observation is open to the student. There are also extremely good opportunities for practical work in the various dispensaries of the city, in the Maternity Hospital with its large out-door department, and also at the Royal Hospital for Sick Children, the Eye Infirmary, and the Royal Asylum of Gartnavel.

The Students' Union, situated in the University grounds, is very convenient, and much taken advantage of.

Lodgings are to be found all round the neighbourhood, so that the whole life of the student, his work and his recreation, is drawn into a small circle, within which he can move as busily and as profitably to himself as in any teaching school in the kingdom.

A students' magazine is usually issued weekly during the session, and has a successful circulation amongst all the students at Gilmorehill. For medical students there is a Medico-Chirurgical Society for debating purposes.

Queen Margaret College for Women

In February 1892 the Universities' Commission issued an ordinance empowering the Scottish University Courts to make

provision, within the Universities, for instruction of women. The Council of Queen Margaret College, in consideration of this provision, made over their work to the University. The "Queen Margaret College" survives now as the part of the University which is devoted to the education of women.

A full course of medicine and surgery is obtainable. The regulations, fees, etc., are similar to those for men. The buildings are pleasantly situated in grounds of their own, close to the Botanic Gardens. The newly-built anatomical department is excellently arranged and most complete. Clinical work is amply provided for in the Royal Infirmary and its Dispensaries, and in the Royal Hospital for Sick Children, the Glasgow Maternity Hospital, the Royal Asylum of Gartnavel, and the Belvidere Fever Hospital. There are also arrangements for special study and research.

Students can have board and lodging at Queen Margaret Hall, within easy reach of the College, at the rate of about one guinea per week for each week of the session. The school is flourishing and largely attended. There is a winter session commencing in October and a summer session in April.

All information necessary can be obtained from Miss Galloway, Queen Margaret College, Glasgow.

St Mungo's College Medical School, Glasgow

St Mungo's College was the outcome of the Royal Infirmary Medical School which was opened in 1876. The venerable Infirmary has now actively existed for one hundred and five years, and the students of St Mungo have peculiarly good opportunities for practical and clinical work in the wards and dispensaries. To the Royal Infirmary a large number of accidents are admitted, and numerous medical cases of all kinds; and for students, and more especially for house-surgeons and house-physicians, the practical experience is abundant. St Mungo's College buildings are attached to the Dispensary and adjacent to the Infirmary. The winter session opens in October, and there is always a summer session from April to July. All information regarding classes, fees, etc., can be obtained from the Dean, St Mungo's College, 86 Castle Street. The classes are for male students only. The class-rooms and laboratories have accommodation for 300 or 400 students. The anatomical department consists of large, well-lighted dissecting rooms, a lecture-room, and osteology gallery and museum. There are also chemical, physiological, zoological, and botanical laboratories. In the adjacent dispensaries fully 40,000 patients

are seen yearly. Students can also have access to the well-equipped Pathological Museum and Laboratory of the Infirmary and the bacteriological department.

The electrical department of the hospital is one of the best in the country.

The bursaries are few in number, but the class fees are moderate, averaging two guineas for a winter course, while the combined theoretical and practical courses of anatomy, zoology, physiology and pathology are four guineas each.

A Public Health Laboratory is also open to students for a complete course in practical work, and there are two lectureships on this subject, so that those who desire may conform to the new regulations of the Medical Council and the requirements of the examining boards. Excellent instruction in fevers can be obtained at the Belvidere Hospital. Dressers and clerks are chosen from the students for work in the wards of the Infirmary.

Anderson's College Medical School,

Dumbarton Road, Partick, Glasgow

The old institution known as "Anderson's University" was founded by John Anderson, M.A., F.R.S., in 1726, and the medical school connected therewith dates back to the year 1800.

In 1877 the name of the Institution was altered from "Anderson's University" to "Anderson's College." In 1887 the medical school of Anderson's College became a distinct Institution known as "Anderson's College Medical School."

The new buildings are situated in Dumbarton Road, immediately to the west of the entrance of the Western Infirmary, and four minutes' walk of the University. They are constructed on the best modern principles, and are provided with all the appliances requisite for the conduct and management of a fully-equipped medical school.

Lectures are delivered in all the subjects of the five years' curriculum :—

Anatomy—Professor A. M. Buchanan, M.A., M.D.
Chemistry—Professor J. Robertson Watson, M.A.
Physics—Professor Peter Bennett.
Zoology—Professor Geo. Bell Todd, M.B.
Botany—Professor B. G. Cormack, M.A., B.Sc.
Physiology—Professor W. Ernest Thomson, M.A., M.D.
Surgery—Professor T. Kennedy Dalziel, M.B.

Practice of Medicine—Professor R. S. Thomson, M.D., D.Sc.
Materia Medica—Professor R. Barclay Ness, M.A., M.B.
Midwifery—Professor John Edgar, M.A., B.Sc., M.B.
Medical Jurisprudence and Hygiene — Professor Carstairs Douglas, B.Sc., M.D., F.R.S.E.
Ophthalmic Medicine and Surgery—T. Spence Meighan, M.B.
Aural Surgery—James Galbraith Connal, M.B.
Diseases of Throat and Nose—John Macintyre, M.B., F.R.S.E.
Mental Diseases—John Carswell, F.R.C.P.E., F.F.P.S.G.

Degrees and diplomas: Certificates of attendance on the lectures at Anderson's College Medical School are received by the Universities of London and Durham, by the Royal University of Ireland, and by all the Royal Colleges and Licensing Boards in the United Kingdom. They are also recognised by the Universities of Glasgow and Edinburgh under certain conditions which are stated in the calendar of this school.

Candidates for the licence in dental surgery can obtain at this school the full medical curriculum which is required. The courses special to dentistry are conducted at the Glasgow Dental School, 5 St Vincent Street.

Malcolm Kerr Bursary in anatomy. Value £10. Open to students of the junior anatomy class during session 1901-1902.

Class fees.—For each course of lectures (anatomy, ophthalmic medicine and surgery, aural surgery, diseases of throat and nose and mental diseases excepted): first session, £2, 2s.; second session (in Anderson's College), £1, 1s.; afterwards free. For practical classes (except anatomy), viz., chemistry, botany, zoology, physiology, pharmacy, operative surgery): first session, £2, 2s.; second session, £2, 2s.

Reduced joint fees in zoology and in botany, for lectures and practical class when taken in same summer session, £3, 3s.; for either course separately, £2, 2s.

Anatomy class fees: Winter, first session (including practical anatomy), £4, 4s.; second session (including practical anatomy), £4, 4s.; third session, £2, 2s. To those who have had the necessary courses of practical anatomy, the fee will be £1, 1s.

Summer—Lectures and practical anatomy, £2, 12s. 6d.; lectures alone, £1, 11s. 6d.; practical anatomy alone, £1, 1s; osteology and practical anatomy, £2, 12s. 6d.; osteology alone, £1, 11s. 6d.

Students who have attended classes at other schools, and who desire to pursue their studies at Anderson's College Medical School, will be admitted to such classes as they may have attended elsewhere, at the reduced fees.

Ophthalmic medicine and surgery (including hospital practice)

—Aural surgery, diseases of throat and nose, and mental diseases, £1, 1s.

Matriculation fee—10s. to those taking out two or more classes; 5s. to those taking out one class only. The matriculation fee of 10s. represents a combined fee for the winter and summer sessions.

Western or Royal Infirmary.—Fees: Hospital practice and clinical instruction: first year, £10, 10s.; second year, £10, 10s., afterwards free. Six months, £7, 7s. at Western Infirmary; £6, 6s. at Royal Infirmary; three months, £4, 4s. Vaccination fee, £1, 1s. Attendance at the dispensaries of the Western and Royal Infirmaries is included in the hospital fees.

A calendar may be obtained from the secretary, Dr R. Barclay Ness, Anderson's College Medical School, Dumbarton Road, Partick, Glasgow.

Aberdeen University

The course of study for the degree of M.B., Ch.B., extends over five years, of which two at least must be spent in the University of Aberdeen.

The curriculum is the same as in the other Scottish Universities as far as relates to attendance on University classes, to clinical study at a General Hospital, to attendance on courses of Clinical Surgery, Clinical Medicine, Mental Diseases, and Practical Pharmacy, to instruction in Vaccination, to attendance on Cases of Labour, and to the practice of a Dispensary.

The candidate must also, before admission to the final examination, produce the following certificates:—

(1) That he has acted as clerk in the Medical and Dresser in the Surgical Wards of a Public Hospital, each for a period equivalent to one Winter Session.

(2) That he has been present at not fewer than twenty-five *post-mortem* examinations at a Hospital or Dispensary, some of which he must have taken part in performing.

(3) That he has attended for at least three months the practice of a General Fever Hospital with not fewer than forty beds.

(4) That he has attended for at least three months a course of clinical instruction in the Diseases of Children.

(5) That he has attended for at least three months the Ophthalmological practice of a Hospital or Dispensary, where special provision is made for giving instruction.

Certificates for these various classes and courses must attest

not only regular attendance, but also due performance of the work.

There is no prescribed order of study, but a scheme, representing the minimum curriculum, has been drawn up for the guidance of students, and is printed in the Calendar.

The following are the Classes in the Medical Faculty:—

WINTER SESSION

Zoology—Professor John Arthur Thomson, M.A.
Chemistry—Professor Japp, M.A., LL.D., F.R.S.
Anatomy—Professor Reid, M.D., F.R.C.S.
Practical Anatomy—Professor Reid and Assistants.
Physiology (*Syst. and Pract.*)—Professor MacWilliam, M.D.
Materia Medica—Professor Cash, M.D., F.R.S.
Pathology (*Syst. and Pract.*)—Professor Hamilton, M.B., F.R.C.S.E., F.R.S.E.
Surgery—Professor Ogston, C.M., M.D.
Medicine—Professor Findlay, B.A., M.D., F.R.C.P.
Midwifery and Diseases of Women aud Children—Professor Stephenson, M.D., F.R.C.S.E.

SUMMER SESSION

Botany—Professor Trail, M.A., M.D., F.L.S., F.R.S.
Practical Botany—Professor Trail.
Zoology—Professor Thomson.
Practical Zoology—Professor Thomson.
Physics—Professor Niven, M.A., D.Sc., F.R.S.
Practical Chemistry—Professor Japp and Assistants.
Practical Anatomy—Professor Reid and Assistants.
Practical Materia Medica and Pharmacy—Professor Cash and Assistant.
Physiology (*Syst. and Pract.*)—Professor MacWilliam.
Forensic Medicine—Professor Hay, M.D.
Practical Hygiene and Forensic Medicine—Professor Hay.
Pathology (*Syst. and Pract.*)—Professor Hamilton.
Practical Midwifery and Gynecology and Clinical Diseases of Children.—Professor Stephenson.
Tropical Medicine—Dr G. A. Maconachie, Lecturer.

Systematic and Practical Pathology, and Systematic and Practical Physiology respectively are now taught as parts of one continuous course, occupying a whole academic year—*i.e.* a summer and a winter session.

There are Assistants to the Professors in the Medical Faculty

appointed annually, two in the departments of Anatomy and Chemistry, and one in each of the other departments.

The following are recognised as Lecturers:—

Lecturer on Mental Diseases . .	Wm. Reid, M.D.
„ Ophthalmology . .	C. H. Usher, M.B., B.C., F.R.C.S.E.
„ Vaccination . .	R. G. M'Kerron, M.A., M.D.
„ Skin Diseases . .	J. F. Christie, M.A., M.B., C.M.
„ Diseases of Ear, Throat and Nose . .	J. Mackenzie Booth, M.D., C.M.
„ Ophthalmology . .	A. Rudolph Galloway, M.A., M.B., C.M.

All the University Classes are held at Marischal College.

Tutorial Classes are held in connection with most of the Systematic Courses, and practical instruction is given in the fully-equipped Laboratories connected with the several departments.

Graduates or others desirous of engaging in special study or research may be allowed by the Senatus to work in any of the Laboratories. Such Research Students are exempted from payment of Laboratory Fees (*v. infra*), but must matriculate each year, paying the ordinary Matriculation Fee.

Fees for Ordinary Laboratory Course—

For six hours a week (winter session) .	£3	3	0
Each additional hour („ „) .	0	10	6
For nine hours a week (summer „) .	3	3	0
Each additional hour	0	7	0
Or, For one month (all day) . . .	4	4	0
„ two months („) . . .	7	7	0
„ three „ („) . . .	10	10	0

The Matriculation Fee must be paid in addition.

General clinical instruction is obtained in the following Medical Institutions:—

The Royal Infirmary of Aberdeen

This General Hospital, situated about seven minutes' walk from Marischal College, has been recently constructed on the most modern principles, and is fully equipped with all the requirements for medical work and teaching. It accommodates upwards of two hundred patients; the number of patients admitted during the year 1900 was 2646, and the number of out-patients treated during the same period was 7391.

Four resident medical officers are appointed annually, two in May and two in August, from those who have completed their medical course, to hold office for twelve months. Salary, £25 with board.

Fees.—Perpetual fee to hospital practice, £6, or first year, £3, 10s., second year, £3, afterwards free; clerkship in medicine, £1, 1s.; dressership in surgery, £1, 1s.; pathological demonstrations, £1, 1s. (Special courses of lectures are charged for.)

Royal Hospital for Sick Children

It is situated about five minutes' walk from Marischal College.

It accommodates over 80 patients, having recently undergone extension. The number of patients admitted in 1900 was 724, and the number of out-patients treated, 1096. No infectious disease except diphtheria is treated.

Each student must act as clerk for six weeks in the medical and surgical wards respectively.

There is one qualified house physician and surgeon (resident) who holds office for six months. Salary at the rate of £25 per annum.

Fee for hospital practice, £2, 2s.

Royal Asylum

It is situated about fifteen minutes' walk from Marischal College. It accommodates over 800 patients, and has been recently fitted up with a fully equipped hospital and a laboratory.

The senior physician is recognised by the University as lecturer on mental diseases, and delivers a qualifying course of lectures.

The City (Fever) Hospital

It is situated about ten minutes' walk from Marischal College, and accommodates 100 patients.

Senior students are admitted for instruction in fevers twice a week under the visiting physician (who is the Medical Officer of Health for the City) and his assistant. Fee, £1, 1s.

There is one qualified resident house physician, appointed annually. Salary, £50 and board.

General Dispensary, Lying-in, and Vaccine Institution

It is situated about two minutes' walk from Marischal College.

The total number of cases treated during 1900 was 11,801, and the number of patients treated at their own homes, 3368. There were 334 midwifery cases.

the framing of reports of analysis. The laboratory attendance must extend over at least fifteen hours a week.

The qualifying courses of laboratory instruction in Aberdeen University are given in the Public Health Laboratory (Fee, £6, 6s.), and the Bacteriological Laboratory (Fee, £3, 3s.).

The Diploma is conferred after an examination in March and July of each year.

The examination is written, oral and practical, and is divided into two parts.

Part I. embraces the following subjects in their application to Public Health.

(α) Physics, Engineering, and Meteorology.
(β) Chemistry, Microscopy, and Bacteriology.

Part II. embraces:—

(α) General Hygiene.
(β) Sanitary Law and Vital Statistics.

Part I. may be taken alone, or both parts together.

The written examinations occupy two days, and the oral and laboratory and outdoor examination three to four days.

Candidates must send in their names, together with certificates of requisite instruction and fee, to the Secretary of Faculties, a fortnight before the examination. Examination fee is five guineas. Re-examination fee one guinea.

SUMMARY OF FEES

I. University Fees

(α) Preliminary Examination (each occasion) .				£0	10 6
(β) Matriculation—For whole year . .				1	1 0
For Summer Session .				0	10 6
(γ) Class Fees.—Each Systematic Course—First attendance .				3	3 0
„ —Each subsequent attendance .				2	2 0
Each Practical and Operative Course . . .				3	3 0
Except { Practical Botany .				2	2 0
Except { and Practical Zoology .				2	2 0
(δ) Degree Fees—For M.B., Ch.B.—					
1st Professional Exam.	£5	5	0		
2nd „ „	5	5	0		
3rd „ „	5	5	0		
4th „ „	7	7	0		
				£23	2 0

Re-examination fee for not more than two subjects	1	1	0
„ for each additional subject .	0	10	6
For M.D.	10	10	0
For Ch.M.	10	10	0
Re-examination Fee	2	2	0

II. NON-UNIVERSITY FEES

Royal Infirmary—Perpetual Fee . .	£6	0	0
Children's Hospital	2	2	0
Dispensary—Perpetual Fee . . .	3	3	0
City (Fever) Hospital	1	1	0
Lectures on clinical medicine—Winter Session .	3	3	0
Summer „ .	2	2	0
„ clinical surgery — Winter Session .	3	3	0
Summer „ .	2	2	0
Clerkship at Royal Infirmary . . .	1	1	0
Dressership „ „ . . .	1	1	0

Course of lectures on: Tropical Medicine; Diseases of eye; „ ear, throat and nose; „ skin; Mental diseases — Each £1, 1s.

Instruction in: Vaccination; Medical electricity; *Post-mortem* room — Each £1, 1s.

The cost of matriculation, class, and hospital fees for the whole curriculum, exclusive of fees for degrees, is usually about £100.

University of St Andrews

The medical degrees are the same as those of the other Scottish universities, and they are granted under similar conditions. The graduation fees for the degree of M.B., Ch.B. amount to twenty-two guineas, and for M.D. or Ch.M. ten guineas.

United College, St Andrews, affords considerable facilities to students beginning a medical course, especially if they are willing to combine it with a preliminary two years of study for an Arts or Science degree. Under the new regulations, which make it possible to study botany, zoology, chemistry and physics as part of the course for an M.A. degree, the medical student can, during the early years of his medical course, hold some of the many bursaries or scholarships which the University of St Andrews has to offer. For women the large number of Taylour Thomson bursaries (several are at present vacant), to which

female medical students have a preference, makes the course in St Andrews specially advantageous. There are several £20 bursaries for men. The cost of rooms and living is considerably under that in the larger towns. For women there is an excellent residential hall, and other students may attend the common dinners in the Union. The medical course in St Andrews extends over two years, and embraces all the subjects of the first two professional examinations. The other subjects must be studied elsewhere, but the student may take all the examinations in the University and graduate there. There are special buildings for the Medical School.

University College, Dundee, is now able to offer the student the option of completing his course in Dundee and graduating in the University if he so choose. There are at present several bursaries which may be held by medical students. The chief attraction of the school in Dundee is its abundance of opportunities for clinical work. With the completion of the Caird Wards the Royal Infirmary has fully 300 beds, including special wards for obstetrics, gynecology, children, and ophthalmology, and in addition there are an epidemic hospital and a large asylum, and an hospital for incurable diseases has been opened. There are four largely-attended dispensary districts. In addition to the College and class libraries, the students have the use of the Dundee Medical Library, a collection of 3000 volumes, which is being steadily added to. The small number of students at present in the school enables each to secure much more individual tuition, and a very much larger amount of clinical work and experience than is possible in the larger schools.

The classes at the United College, St Andrews, are:— Natural philosophy; practical physics; chemistry; practical chemistry; natural history; practical zoology (when taken along with the ordinary classes the fee for each of these three practical classes is £1, 1s.); botany; practical botany; physiology; anatomy; practical anatomy; materia medica; practical materia medica.

At University College, Dundee, full courses in medicine and in public health are now given.

PROFESSORS AND LECTURERS

Physics— Professor Butler.
Chemistry— Professor Purdie.
Zoology— Professor Mackintosh.
Botany Lecturer—
Mr R. A. Robertson.
Physiology—Professor Pettigrew.
Dr Harris.

Anatomy Lecturer—
Professor Musgrove.
Materia Medica—
Professor Marshall.

DUNDEE

PROFESSORS AND LECTURERS.

Physics— Professor Kuenen.
Chemistry— Professor Walker.
Zoology— Professor D'Arcy Thompson.
Botany— Professor Geddes.
Physiology—Professor Waymouth Reid.
Anatomy— Principal Yule Mackay.
Surgery, Systematic and Operative—
Professor MacEwan.
Surgery, Clinical—
Professor MacEwan.
Mr D. M. Greig.
Medicine, Systematic—
Professor Stalker.
Medicine, Clinical—
Professor Stalker.
Dr Mackie Whyte.
Materia Medica—
Professor Marshall.
Pathology— Professor Sutherland.
Midwifery and Diseases of Women—
Professor Kynoch.
Midwifery and Diseases of Women, Clinical—
Professor Kynoch.
Dr R. C. Buist.
Forensic Medicine—
C. Templeman, M.D., D.Sc., M.O.H.
Ophthalmology—
A. M'Gillivray, M.D.
Mental Diseases—
J. Rorie, M.D.
Diseases of Ear and Throat—
G. T. Guild, M.B.
Vaccination—
R. C. Buist, M.D.

Qualifications given by the Scottish Colleges

The "triple qualification," as it is termed (L.R.C.P.E., L.R.C.S.E., L.F.P.S., Glasgow), is granted by the three Cor-

porations, the Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Faculty of Physicians and Surgeons of Glasgow, by means of conjoint examinations. Female students are admitted to the examinations on the same footing as male students.

PRELIMINARY EXAMINATION.—This is much the same as is required by the University of Edinburgh. The Educational Institute of Scotland conducts a qualifying Preliminary examination for medical students on behalf of the Colleges. Particulars of this examination may be obtained from Alexander Mackay, LL.D., 40 Princes Street, Edinburgh. The whole of the examination must be passed at one time in order to obtain a certificate. Various other certificates of having passed certain examinations are recognised as exempting from this examination, and these are enumerated in the regulations of the Colleges.

REGISTRATION.—After passing the preliminary examination the student should at once enter his name on the register of medical students kept by Mr James Robertson, 54 George Square, Edinburgh.

PROFESSIONAL EXAMINATION.—The curriculum must extend over five years. Graduates in Arts or Science of any recognised University who have spent a year in the study of Physics, Chemistry and Biology, and have passed an examination in these subjects for the degrees in question, are exempted from the first year of study.

It is advisable to devote the fifth year to clinical work in any recognised Public Hospital or Dispensary, and to the study of special diseases. In lieu of this, however, six months of the final year may be passed by the student as a pupil to a registered practitioner who is deemed to be capable by the committee of management.

ORDER OF STUDY WHICH IS RECOMMENDED

First Summer.— Three months' course in Physics and Elementary Biology.

First Winter.— Six months' course in Chemistry; three months' course in Practical Chemistry.
Anatomy.

Second Summer.—Histology—Three months' course.
Practical Anatomy.

Second Winter.— Lectures on Anatomy—Six months' course.
Lectures on Physiology—Six months' course.
Practical Anatomy—Twelve months.

Third Summer.—Pathology, Materia Medica, and Practical Materia Medica—Three months' course in each. Hospital practice.

Third Winter.— Six months' course in Surgery and Clinical Surgery. Attendance at Hospital.

Fourth Summer.—Three months' course in Midwifery and Gynæcology.
Medical Jurisprudence and Public Health.
Clinical Surgery—Attendance at Hospital.

Fourth Winter.— Lectures on Medicine and Clinical Medicine —Six months' course in each.

Fifth Summer.— Three months at Clinical Medicine.
Practical Midwifery—Personal attendance on twenty cases under the direction of a medical practitioner, *or* alternatively, three months' attendance at a Lying-in institution and personal attendance on six cases.
Insanity, Diseases of Children, Diseases of the Eye.

Fifth Winter.— Fevers, Operative Surgery, Vaccination, Dispensary Practice, Skin Diseases, Ear and Throat. Hospital.

PROFESSIONAL EXAMINATIONS.—Four of these are held during the curriculum. Each is held quarterly in Edinburgh and bi-annually in Glasgow. Candidates may go up for all the subjects of the first Professional examination at once, or may enter for and pass in any division of subjects. A higher percentage of marks is required, however, from candidates entering for such divisions. Candidates are very strongly recommended to enter for the entire examination.

Candidates must enter for *all* the subjects of the second, third, and final examinations.

First Examination.— This embraces Physics, Chemistry, and Elementary Biology. It may be taken wholly or in divisions, and should be passed before the beginning of the second winter session.

Second Examination.—Anatomy, Physiology, including Histology. This should be passed at the end of the second year of study.

Third Examination.—Pathology, Materia Medica, and Pharmacy. This should be taken at the end of the third year.

Final Examination.—Can only be taken at the end of the fifth year. The candidate must have attained the age of twenty-one.
It includes—

1. Medicine, Therapeutics, Medical Anatomy, Clinical Medicine.
2. Surgery, Surgical Anatomy, Clinical Surgery, Diseases of the Eye.
3. Midwifery and Diseases of Women and Newly-born Children.
4. Medical Jurisprudence and Public Health.

FEES FOR PROFESSIONAL EXAMINATIONS

For the first three £5 each. For the final £15. The total expenses for the licences amount to from £110 to £120.

DIPLOMA IN PUBLIC HEALTH OF THE ROYAL COLLEGES

This Diploma is granted by the Triple Qualification Board after one series of examinations.

1. Every candidate must have held a registrable medical qualification for one year before appearing for this examination.

2. After graduation in Medicine he must have attended during six months a Public Health Laboratory recognised by the Board, and in which Chemistry, Bacteriology, and the Pathology of the Diseases of Animals transmissible to man are taught.

3. He must have studied practically after obtaining his medical qualification, during six months, outdoor sanitary work under a recognised teacher, as

(*a*) In England and Wales a Medical Officer of Health of a county or district with not less than 50,000 population.

(*b*) In Scotland or Ireland the Medical Officer of a county or combination with not less than 30,000 inhabitants.

(*c*) Under a Medical Officer of Health who is a teacher in the Department of Public Health in a recognised medical school.

If the candidate have been a Medical Officer of Health himself he is exempted from this regulation.

4. He must have studied fevers clinically in a recognised hospital for three months after receiving a Registrable qualification.

The First Examination includes—

(1) Laboratory work—very much the same as for the University of Edinburgh.

(2) Chemistry. (3) Physics. (4) Meteorology. (5) Bacteriology.

Second Examination embraces—

(1) Report on premises visited.

(2) Examination at Fever Hospital.

(3) Examination at Public Abattoir.

(4) Epidemiology and Endemiology.
(5) Vital Statistics and Sanitary Law.
(6) Practical Sanitation.

The Examinations are held twice yearly, in October and May. Fee for each, £6, 6s. Re-examination, £3, 3s.

Apply to Mr JAS. ROBERTSON, 54 George Square, Edinburgh, or to Mr ALEXANDER DUNCAN, LL.D., 242 St Vincent Street, Glasgow.

MEMBERSHIP AND FELLOWSHIP OF THE ROYAL COLLEGE OF PHYSICIANS, EDINBURGH

The candidate must hold a recognised qualification, and be of the age of twenty-five years. He must pass an examination on Medicine and Therapeutics and on Clinical Medicine, and on some special branch of medicine—*e.g.* Psychological Medicine, Pathology, Medical Jurisprudence, Public Health, Midwifery, Gynæcology, Neurology, etc.

The fee for the Membership is £31, 10s.; but if the candidate hold the Licence of the College it is £15, 15s.

The Fellowship is conferred by election on Members of not less than three years' standing—the fee being £56, 10s.

FELLOWSHIP OF THE ROYAL COLLEGE OF SURGEONS, EDINBURGH

Every candidate for the Fellowship must be twenty-five years of age, and must have been engaged in the practice of his profession for two years after obtaining a recognised qualification in Surgery. He must pass an examination on the Principles and Practice of Surgery, Surgical Anatomy, Operative and Clinical Surgery, and one optional subject—*e.g.* Ophthalmology, Aural and Laryngeal Surgery: Cerebro-Spinal, Abdominal, Gynæcological, Orthopædic, Dental, Venereal and Genito-Urinary Surgery: Advanced Anatomy or Physiology, Surgical Pathology and Morbid Anatomy, Midwifery, Medical Jurisprudence and Public Health.

The petition for examination must be signed by two Fellows as proposer and seconder. The payments to the College funds amount to £45. If the candidate be a Licentiate of the College, the payment is only £30.

Medical Education of Women in Edinburgh

MEDICAL COLLEGE FOR WOMEN, MINTO HOUSE, CHAMBERS STREET

This College is conducted by the Scottish Association for the Medical Education of Women—an Association which has

for its object the furthering of the medical education of women on a liberal basis.

The curriculum is the same as that provided for male students in the University, and is recognised by the University of Edinburgh as qualifying for graduation in Medicine and Surgery, as well as by the other Universities and Colleges open to women.

Fees are the same as for male students, varying to some extent according as the student intends to take a University degree or a College qualification. Students are required to pay a College matriculation fee of 25s. for the winter session, and 15s. for the summer session.

The prospectus for the Medical College for Women, as well as any information regarding the medical education of women in Edinburgh, can be obtained from Miss Mackay, Secretary, Medical College for Women, Minto House, Chambers Street, Edinburgh, who will also be glad to furnish lists of lodgings to intending students.

Clinical tuition is provided in the Edinburgh Royal Infirmary.

New Books and New Editions

Clinical Lectures on Stricture of the Urethra, and Enlargement of the Prostate. By P. J. FREYER, M.A., M.D., M.Ch., Surgeon to St Peter's Hospital; Lieut.-Colonel, Indian Medical Service (Retd.). 8vo, pp. 115. London: Baillière, Tindall & Cox. 1901.

IN a lay journal a few years ago, Dr Burney Yeo made a statement, as bold as it was true, regarding the motive which prompts the publication of nine-tenths of medical articles and books. Such a motive is the only reason we can assign for the existence of this book. It consists of six lectures delivered at the Medical Graduates' College, published "at the suggestion of many who were present at the Lectures." This suggestive audience really should not have put Dr Freyer to such needless trouble; for they could have found all the information of any value which he gives in most of the ordinary text-books of to-day.

Dr Freyer is quite right in objecting to the practice of tying a catheter in the bladder after internal urethrotomy, on the ground of its causing irritation and suppuration in the wound. But when he further objects because it "induces healing by granulation, which is to be avoided, leading, as it does, to subsequent contraction," he is surely at fault. Catheter, or no

catheter, the wound must heal by granulation, unless the stricture is to re-form at once. Why, the author refutes himself on the next page! He might have argued (incorrectly, of course) that the wound in the urethra unites by first intention, and that, after a fortnight, the scar may be stretched by the passage of an instrument, but he does not so argue. He says—quite correctly—that the elastic ring of fibrous tissue cut in the operation "opens out; the cut ends separate, leaving a wide gap between them." This is quite a correct statement, of course; but the wide gap, the raw surface, must heal by granulation. The lectures on Enlargement of the Prostate contain a little more fresh matter than those on Stricture. We notice such misprints as "benzate" for "benzoate," and "installations" of silver nitrate for "instillations."

This is quite a good and sound little book, but quite needless. How different from the same author's valuable book on Litholapaxy, every page of which is full of experience and acute observation! "LITHOTRITE."

Paralytic Deformities of the Lower Extremities. The Principles of their Surgical Treatment. By E. NOBLE SMITH, F.R.C.S. Edin., L.R.C.P. Lond., etc. Senior Surgeon to the City Orthopedic Hospital, and Surgeon to All Saints' Children's Hospital, London. Author of "The Atlas of Histology" (jointly with Dr Klein), "The Descriptive Atlas of Anatomy," "The Surgery of Deformities," "Spinal Caries" (Second Edition), "Curvatures of the Spine" (Fourth Edition). Editor of "General Orthopedics, Gymnastics, and Massage" in Von Ziemssen's "Handbook of General Therapeutics," etc. With 51 illustrations. London: Smith, Elder & Co., 15 Waterloo Place. 1900.

IN this little book Mr Noble Smith gives a clear account of the main paralytic deformities of the lower limb. The use of mechanical apparatus and the various operations are discussed shortly. In dealing with the operation of tendomy for club-foot, he advises strongly the practice of putting the foot in the correct or over-corrected position at once, without any fear of non-union or weak union, and states that he has followed this practice for the last fifteen years. A reference to text-books will show that surgeons are not agreed on this point. Cheyne and Burghard in their recent work do not unhesitatingly advise immediate replacement, while others do. The author deems it "a golden rule in orthopedic surgery" to divide the structures which keep the foot inverted, and have the position thoroughly

corrected before dividing the tendo Achillis. With this most authorities agree, though Clutton, for instance, advocates an exactly opposite procedure, on the ground that till the tendo Achillis is divided, it is impossible to gauge the extent of the inverting contraction, or distinguish the individual factors.

Under "Osteotomy," the first paragraph comes as a surprise. Mr Noble Smith does "not believe that this operation is ever necessary in young children. In adults it is another matter. I have seen one case in which osteotomy was decidedly beneficial." Mr Smith does not refer to excision of the astragalus, nor removal of a part of that bone; but if he would include that in his statement, it is not easy to agree with it. "Young children" may mean "infants," but, if not, there are many patients not adults in whom such an operation is the only one of any use, and very successful it is.

Some useful points will be found indicated in the chapter on "The Scientific Use of Mechanical Apparatus," and an interesting paper, published in the *Lancet*, is reprinted here under the title of "A new method of restoring the absent functions of muscles in Infantile Paralysis."

"LITHOTRITE."

Photographic Atlas of the Diseases of the Skin. A Series of Eighty Plates, comprising more than One Hundred Illustrations and with Descriptive Text and a Treatise on Cutaneous Therapeutics. By GEORGE HENRY FOX, A.M., M.D., Clinical Professor of Diseases of the Skin, College of Physicians and Surgeons, N.Y., etc. Large Quarto. In sixteen monthly parts at 6s each, net. Parts 4, 5, and 6. Philadelphia and London: J. B. Lippincott & Co.

WE have been waiting for this Atlas. Its advent was heralded by a circular which might have been written by the American Eagle himself with a quill plucked from his own wing. We are glad to note that it is headed "Publishers' Announcement," for it is inconceivable that any author should have allowed such a circular to be issued. Here are some of the statements.

"For imparting a practical knowledge concerning the diagnosis and treatment of skin diseases, no other work can compare with it." "The perusal of a page of any chapter on treatment will demonstrate that the subject is presented in a thoroughly interesting and illustrative manner, quite unlike the unsatisfactory discussion of Dermatological Therapeutics in the average text-book." "Clearly teaches the general practitioner how to treat the majority of skin diseases, at least in their

earlier and less obstinate forms, and thus secure to himself the reputation and remuneration so frequently diverted to the specialist."

Dr Fox may well pray, "Save me from my publishers."

The work appears in parts, each of which commences with a portion of a short systematic treatise on diseases of the skin.

The circular tells us that (unlike the other poor creatures who have written books) the author never leaves the reader in doubt as to what course of treatment to adopt, so we quote page 72 on the treatment of Dermatitis Herpetiformis.

"Arsenic may control or check the eruption." "As a rule this drug should not be relied upon." "Winfield praises Cannabis indica as one of the most valuable sedatives." "Antipyrin and Phenacetin have been used with good effect." "I have known the concentrated tincture of avena sativa to relieve the highly nervous condition." Under local treatment there are mentioned Lotions, Sulphur or Salicylic ointment, strong Carbolic Acid Lotion, a mixture of Camphor and Chloral in Oil, and general galvanism.

The general arrangement of this part of the work is the American alphabetical method, and we think we could point out a good many books which are at least as informing as this.

The plates are admirable. Dr Fox is well-known as one, if not the most skilful, of dermatological photographers. Samples of his collection have been shown at various Congresses, and have always been greatly admired. Each part contains five plates produced by some process of colour printing. The circular gives one to understand that they are coloured Photos, but examination with the lens shows the cross lining of the ordinary zinc block, and the colour is evidently super-imposed on a grey background. As illustrations of disease, the majority of them are most successful. The colours are very true, and the photographic background undoubtedly gives a reality to the appearance which none but the highest class of lithographic work can approach.

List of Books Received since January

From H. K. Lewis, London.

William Hunter, Anatomist, Physician, Obstetrician. By R. Hingston Fox, M.D. Brux., M.R.C.P. Lond. Price 4s. 6d.

Purulent Nasal Discharges. By Herbert Tilly, M.D., B.S. Lond. Price 4s.

The Sanitary Inspector's Hand-Book. By Albert Taylor, Memb. San. Institute, Sanitary Inspector, City of Westminster. Third Edition. Price 6s.

Diseases of the Nose and Throat. By F. de Havilland Hall, M.D., and Herbert Tilly, M.D., B.S. Second Edition. Price 10s. 6d.

From Cassell & Company, Limited, London.

Difficult Labour. By G. Ernest Herman, M.B. Lond. New and Revised Edition. Price 12s. 6d.

Surgical Diseases of the Kidney and Ureter. By Henry Morris, M.B. Lond. In two volumes. Price 42s.

Tumours: Innocent and Malignant. By J. Bland Sutton. New Edition.

Surgical Applied Anatomy. By Sir Frederick Treves, K.C.V.O., C.B., F.R.C.S. New Edition, revised by Author, with the assistance of Arthur Keith, M.D. Price 9s.

From W. B. Saunders & Co., London.

A Text-Book of Obstetrics. By Barton Cooke Hirst, M.D. Second Edition. Price 21s.

Modern Surgery. By John Chalmers Dacosta, M.D. Price 21s.

A Text-Book of the Practice of Medicine. By James M. Anders, M.D. Fourth Edition. In two vols. Price 24s.

A Text-Book of Histology. By A. A. Böhm, M.D., and M. von Davidoff, M.D. Edited by Carl Huber, M.D. Authorised Translation from Second German Edition. By Herbert H. Cushing, M.D. Price 15s.

A Text-Book of Pathology. By Alfred Stengel, M.D. Third Edition. Price 21s.

Modern Medicine. By Julius L. Salinger, M.D. Price 17s.

A Manual of Syphilis and the Venereal Diseases. By James Nevin Hyde, M.D., and Frank Hugh Montgomery, M.D. Second Edition. Price 17s.

A Manual of the Diagnosis and Treatment of the Diseases of the Eye. By Edward Jackson, M.D. Price 10s. 6d.

A Text-Book of Embryology. By John Clement Heisler. Price 10s. 6d.

A Manual of the Practice of Medicine. By A. A. Stevens, M.D. Fifth Edition. Price 8s.

A Text-Book of the Diseases of Women. By Henry J. Garrigues, M.D. Third Edition. Price 18s.

Atlas and Epitome of Gynæcology. By Dr Oskar Schaeffer. Authorised translation from Second German Edition. Edited by Richard C. Norris, M.D. Price 15s.

Atlas and Epitome of Diseases caused by Accidents. By Dr Ed. Golebiewski. Translated from German by Pearce Bailey, M.D. Price 16s.

Atlas and Epitome of Special Pathologic Histology. By Docent Dr Hermann Dürck. Translation from German. Edited by Ludvig Hektoen, M.D. Circulatory and Respiratory Organs, and Gastro-Intestinal Tract. Price 13s.

Practical Points in Nursing. By Emily A. M. Stoney. Second Edition. Price 7s. 6d.

Obstetric and Gynæcologic Nursing. By Edward P. Davis, M.D. Price 8s.

The Treatment of Fractures. By Charles Locke Scudder, M.D., assisted by Frederic J. Cotton, M.D. Second Edition. Price 19s.

Saunders' Year-Book of Medicine and Surgery. Edited by George M. Gould, M.D. Two vols. Price 26s.

A Text-Book of Diseases of the Nose and Throat. By D. Braden Kyle, M.D. Second Edition. Price 17s.

A Text-Book of the Practice of Medicine. By Dr Hermann Eichhorst. Translated from the German. Edited by Augustus A. Eshner. Two vols. Price 26s.

Atlas and Epitome of Labour and Operative Obstetrics. By Dr Oskar Schaeffer. Authorised Translation from Fifth German Edition. Edited by J. Clifton Edgar, M.D. Price 9s.

Anatomical Atlas of Obstetrics. By same Author. Translated from Second German Edition. Edited by J. Clifton Edgar, M.D. Price 13s.

Atlas of the Nervous System. By Dr Christfried Jakob, with Preface by Prof. Dr Ad. v. Strümpell. Price 15s.

Rhinology, Laryngology and Otology and their Significance in General Medicine. By E. P. Friedrich, M.D. Trans. from German. Edited by H. Holbrook Curtis, M.D.

Atlas and Epitome of Ophthalmoscopy and Ophthalmoscopic Diagnosis. By Prof. de O. Haab of Zurich. Trans. from Third German Edition. Edited by G. E. de Schweinitz, M.D. Price 13s.

Bacteriology and Surgical Technique for Nurses. By Emily M. A. Stoney. Price 5s.

The Pathology and Treatment of Sexual Impotence. By Victor G. Vecki, M.D. Third Edition. Price 8s.

Modern Obstetrics. By W. A. Newman Dorland, M.D. Second Edition. Price 16s.

Practical Surgery. By Nicholas Senn, M.D. Price 26s.

The Illustrated Medical Dictionary. By W. A. Newman Dorland, M.D. Second Edition. Price 19s.

From G. Steinheil, Paris.

Traité de l'Art des Accouchements. Par S. Tarnier. Tome Quatrième.

From Henry Kimpton, London.

A Practical Treatise on Genito-Urinary and Venereal Diseases and Syphilis. By Robert W. Taylor, M.D. Second Edition. Price 25s.

A Text-Book of Gynæcology. Edited by Charles A. L. Reed, M.D. Price 25s.

Introduction to the Study of Medicine. By Professor G. H. Roger. Translation from the French by M. S. Gabriel, M.D. Price 21s.

The Health Resorts of Europe. By Thomas Linn, M.D. Eighth year. Price 2s. 6d.

From Rebman, Limited, London.

A System of Physiologic Therapeutics. Edited by Solomon Solis-Cohen, M.D. Vol. I. Electrotherapy, in two books, illustrated. Price 10s. 6d. each book.

The Students' Manual of Venereal Diseases. By F. R. Sturgis, M.D. Seventh Edition. Revised by F. R. Sturgis, M.D., and Follen Cabot, M.D. Price 6s.

A Text-Book of Pharmacology and Therapeutics. By Arthur R. Cushney, M.D. Second Edition. Price 17s. 6d.

The Practice of Medicine. By James Tyson, M.D. Second Edition. Price 24s.

A Dictionary of Medicine and the Allied Sciences. By Alexander Duane, M.D. Third Edition. Price 14s.

Lectures on Nasal Obstruction. By A. Marmaduke Shield, M.B. (Camb.). Price 5s.

A Manual of Modern Surgery. By John B. Roberts, M.D. Price 21s.

Normal Histology. By Edward K Dunham, Ph.B., M.D. Second Edition. Price 12s.

The Medical Examination for Life Insurance. By Charles Tyman Greene, M.D. Price 17s.

A Text-Book of Histology. By Dr Philip Stöhr. Third American from Eighth German Edition. Translated by Dr Emma L. Bilstein. Edited by Dr Alfred Schaper. Price 14s.

Archives of the Röntgen Ray. August 1900. Price 4s.

A Handbook of Materia Medica, Pharmacy, and Therapeutics. By Samuel O.-L. Potter, M.D. Eighth Edition. Price 21s.

A Manual of Materia Medica and Pharmacology. By David M. R. Culbreth, M.D. Second Edition. Price 20s.

Sexual Debility in Man. By F. R. Sturgis, M.D. Price 12s. 6d.

The Theory and Practice of Medicine. By Henry Walter Syers, M.D. (Cantab.). Two volumes. Vol. i. Price 15s.

Microscopic Examination of the Eye. By Professor R. Greeff. Translated from the Second German Edition by Hugh Walker, M.A., MB., C.M.

Collected Papers from the Physiological Laboratory, London Hospital Medical College, London. No. I. 1897-1900. Arranged by Leonard Hill, M.B., F.R.S.

From John Wright & Co., Bristol.

Sidmouth as a Health Resort and Place of Residence. By A. Macindoe, M.D., D.Ph.

Our Baby. For Mothers and Nurses. By Mrs Langton Hewer, Seventh Edition. Price 1s. 6d.

Medical Annual. 1901. Price. 7s. 6d.

Diseases of the Upper Respiratory Tract. Two Parts. Fourth Edition. Price 17s. 6d.

Golden Rules of Hygiene. By F. J. Waldo, M.D. (Cantab.). Price 1s.

Kitchen Physic. By W. T. Fernie, M.D. Price 6s.

Pulmonary Tuberculosis. By Prof. Carlo Ruata, M.D. Price 3s.

"First Aid" to the Sick and Injured. By F. J. Warwick, M.B.Cantab. and A. C. Tunstall, M.D.

From T. & A. Churchill, London.

Chloroform. By Lieutenant-Colonel Lawrie, M.B. Ed. Price 5s.

Tumours of the Urinary Bladder. By E. Hurry Fenwick. Price 5s.

Selected Researches in Pathology. By Alex. Gunn Auld, M.D. Price 6s.

From J. M. Dent & Co., London.

The Child. His Nature and Nurture. By W. B. Drummond, M.B., C.M. The Temple Cyclopædic Primers. Price 1s.

From J. B. Lippincott, London.

Diseases of the Nervous System. By Prof. H. Oppenheim, M.D. Translation from Second German Edition by Edward E. Mayer, M.D. Price 21s

From James Maclehose, Glasgow.

Manual of the Diseases of the Ear. By Thomas Barr, M.D 3rd Edition.

Glasgow Hospital Reports. Vol. iii.

From Alex. Macdougall, Glasgow.

Transactions of the Glasgow Obstetrical and Gynæcological Society. Vol. ii.

From W. T. Keener & Co., Chicago.

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Notes on Drugs, etc.

Messrs Mather, Ltd., have forwarded us samples of their plasters. It is rather remarkable how the plaster trade has drifted into the hands of Germans and Americans, and there is no obvious reason why equally efficacious plasters should not be made in this country.

Messrs Mather seem to lay themselves out specially for Belladonna plasters, which are supplied with all sorts of backings, swansdown, cotton, and rubber. They are well spread, adhere well, and are guaranteed to contain a definite amount of the alkaloid. Both the root extract and the leaf extract are used in their preparation.

Their adhesive plasters are carefully prepared, and in most cases heat is not necessary in order to get them to adhere.

From the **Esvach Water Co.** we have received a large sample which has been subjected to an extended trial, and has proved a saline aperient at once palatable and efficient. Its action depends on the sulphates of magnesia and soda, which are present in unusually large quantities. It contains no lime salts. Its reaction is slightly alkaline, which enhances its value as a laxative in uric acid conditions.

The water deserves a high position as a saline aperient, at once agreeable to the palate, free from unpleasant griping action, and satisfactory in its effects.

Mr George Lunan, Queensferry Street, Edinburgh, has sent us a sample of his granular effervescent Piperazine. As is well known, piperazine is a powerful solvent of uric acid when free, but when combined as a salt, as has been usually the case when it is administered, its power in that respect is much reduced. Mr Lunan, in this preparation, supplies the piperazine uncombined, and the granules are so made that the drug is ingested in an alkaline menstruum, and is probably absorbed uncombined. The principle is sound, the preparation is chemically what it purports to be, and is in addition elegant and pleasant to take. It certainly deserves a trial.

A visit to the exhibition at Cheltenham has brought its usual train of a large number of samples. From **Messrs Shippam of Chichester**, we have received samples of their soups and jellies, specially prepared for invalids. They are put up in neat glass bottles, and the beef and chicken jelly are both nutritious and palatable.

They make a speciality of a spinach soup for the use of those suffering from kidney disease. We presume that this means that it is a purely vegetable soup. It is quite pleasant to take, and will be welcome to those who, for renal reasons, are forbidden the use of soups made with meat.

From **Messrs Fry & Sons** came a neat sample of their cocoa and chocolate. The former is quite as good as it claims to be, and their Ceylon chocolate, a novelty, has quite a distinctive and rather pleasant flavour of its own.

NOTICE.

All communications to the Editorial Department, including Exchanges and Books for Review, should be addressed to THE EDITOR, Dr W. RUSSELL, 3 *Walker Street, Edinburgh, and all business communications, including Subscriptions, Advertisements, &c., to* THE SUB-EDITOR, Dr NORMAN WALKER, 7 *Manor Place, Edinburgh.*

THE SCOTTISH
MEDICAL AND SURGICAL
JOURNAL

CLINICAL LECTURE

ON

THE CLINICAL FEATURES AND TREATMENT OF SOME PHASES OF FIBROMYOMA UTERI

Delivered in the Royal Infirmary, Edinburgh, June 21st, 1901

By D. BERRY HART, M.D., F.R.C.P.Ed.,
Gynæcologist to the Royal Infirmary

THE non-malignant uterine tumour, known as fibroid of the uterus or fibromyoma uteri, and characterised by an excessive and irregular development of the uterine unstriped muscle and connective tissue, may present itself clinically in many forms, and may require treatment ranging from the strictly negative up through minor operations to severe vaginal or abdominal hysterectomies.

I propose to illustrate some of these points by bringing before you four cases we have had in Ward xxxvi. To do so, I have selected the following :—

1. A case with severe "flooding" treated by curettage.
2. A case of large vaginal polypus, *i.e.* a fibroid polypus expelled from the uterus into the vagina.
3. A case of severe menorrhagia, due to multiple fibroids, treated by double Oöphorectomy.
4. A case of large abdominal fibroid, requiring supra-vaginal hysterectomy and enucleation from the meso-rectum.

CASE I. Mrs M'F., æt. 45 years, married, admitted to Ward xxxvi. on 15th May 1901, complaining of irregular "floodings," the first of which occurred eight months ago.

On admission, hæmorrhage was going on, and from the pallor of the skin and mucous membranes, it was evident that she had lost a large quantity of blood.

Her present attack began six weeks before admission; the bleeding had continued fairly constantly all the time. Douching the vagina with very hot water had been tried with little effect. No pain had at any time been present.

Previous to the above she had had three of varying severity. The first occurred eight months ago and lasted for three weeks. The second occurred seven months ago, and lasted for eight days. The third occurred five months ago, and lasted three weeks.

Previous health has always been good. *Social conditions and habits* satisfactory. *Family health* very good.

Sexual History.

Normal menstruation began at the age of sixteen years, irregular in type, and of seven days' duration, the discharge being profuse on the third and fourth days; quantity profuse.

Morbid.—Dysmenorrhœa was present before marriage, but has not been complained of since then.

Intermenstrual discharge.—Metrorrhagia as above. No leucorrhœa.

Pregnancies.—Four at full time and two abortions. The puerperium in each case was quite normal.

General functional derangements.—A soft systolic mitral murmur is heard at the apex, which is displaced outwards to the extent of about half an inch. Other systems healthy.

Bimanual under Chloroform.

The uterus lies anteverted and is freely movable. It is much enlarged, and a distinct hard nodule is felt on its posterior wall by palpating through the posterior fornix. By the uterine sound the cavity is found to measure 4½ inches in length.

Treatment and Progress.

On May 22nd curettage was performed, and large shreds of hypertrophied endometrium removed. The cavity of the uterus was then plugged with iodoform gauze, and all discharge ceased on the third day after the operation. The patient remaining well, got up out of bed in ten days, and was dismissed much improved.

Remarks on Case I.

This patient when admitted was profoundly anæmic, so much so that I suspected uterine polypus. Usually, however, in such, both pain and menorrhagia are present—the pain being caused by the polypus canalising the cervix, and the hæmorrhage arising from the thickened mucous membrane of the uterus.

When these symptoms are combined, always keep the possibility of polypus in mind. You may miss the polypus with the sound, or even with the curette, and curettage in such cases will be ineffective. Often such a uterine polypus gets driven down through the cervix into the vagina, and you may be glad if that happens before the patient is under another practitioner's care. No pain was present in this case, but if you are in doubt dilate the cervix with a Tupelo tent so as to get your finger in. Remember, therefore, this one defect in sounding and in curetting—you may miss a polypus.

The diagnosis in this case was therefore "interstitial fibroid on the posterior uterine wall with considerable thickening of the endometrium."

It is this thickened endometrium which gives the hæmorrhage, and not the tumour itself, as we shall see well illustrated when we consider Case II.

I deemed it best in this special instance to curette the uterine cavity—leaving the question of further radical treatment by enucleation, oöphorectomy or vaginal-hysterectomy for further consideration.

The result in this case has, so far, been excellent. The patient has had no further hæmorrhage, and left the ward with her anæmia greatly better. Curettage you have all probably seen performed, but I may recapitulate the steps of the operation, as it is very useful in practice for this and other conditions.

The patient is prepared, as usual, for chloroform, placed in the lithotomy posture—the parts carefully cleansed and shaved, and the vagina douched with Lysol (1 in 100) or Corrosive sublimate (1 in 4000). The cleansing of the vagina is best done by a swab of cotton wool held by polypus forceps, and great care should be taken to do it thoroughly.

Having introduced a Sims' speculum, you then seize the anterior lip of the cervix with a volsella, preferably a straight one. The position of the uterus and the length of its cavity are next ascertained by the use of the uterine sound. Dilatation of the cervix is now effected with curved dilators, and you dilate to a size beyond that of the curette you employ. The curette should always pass the cervix easily. If you, by too slight dilatation, allow the cervix to grip the curette, your

sense of touch will be largely lost, and the uterine wall may be perforated. You employ a scoop curette (*e.g.* Martin's), and scrape both walls of the uterus and their junctions thoroughly, although you cannot hope to remove the entire mucous membrane. Strips and islands will be left in spite of all your care as Werth has shown. The mucous membrane regenerates soon—in five days—the new tissue being formed from the columnar epithelium of the fundi of the so-called uterine glands, and from the connective tissue surrounding the vessels.

In this case I packed the uterine cavity with Iodoform gauze, after having washed it out with Lysol (1 in 100), by means of a uterine double catheter. The gauze was removed in twenty-four hours, and a simple antiseptic vaginal douche given daily for a week.

In private practice you may curette, single-handed, if you have an anæsthetist.

You need, however, a crutch (*e.g.* Clover's), a self-retaining speculum (*e.g.* Auvard's), and you must fasten the volsella to the sheet by means of a tape and safety-pin.

The second case was one of large uterine polypus driven into the vagina.

CASE II. Miss W., æt 45, single, admitted to Ward xxxvi. on May 25, 1901, complaining of irregular hæmorrhages of four years' duration.

History.

Four years ago she began to suffer from irregular hæmorrhages which she thought were due to the "Change of Life." These bleedings would occur sometimes every week, and were profuse and of variable duration, from one or two days up to a week. The blood was nearly always clotted. For three years before her present attack no hæmorrhage occurred, and during these three years the menstrual function was not performed. Shortly before admission she had another series of hæmorrhages, and was admitted with hæmorrhage still persisting, which continued even in bed. On several occasions she had an attack of complete retention of urine necessitating the use of the catheter. The first attack of retention of urine occurred four years ago, and since then, at intervals of fourteen to twenty-eight days, she has required her urine drawn off by the catheter. Her last attack of this kind took place a month before admission. These attacks usually came on during the night, and she accounted

for this by her having had extra work to do during the day. She suffered great pain when unable to pass urine, but no dribbling of urine ever took place from an over-distended bladder. Her only other symptom was a discharge of a clear watery fluid — this was not constant, and was never very profuse.

Sexual History.

Normal menstruation began at the age of 15. *Type*—twenty-eight days. *Duration*—seven days. *Quantity*—profuse. *Date of disappearance*—four years ago at the age of 41.

Morbid.—Menorrhagia present for several years before the menopause at the age of 41. *Dysmenorrhœa* slight, and was present on the first day of the menstrual discharge. *Intermenstrual discharge*—slight leucorrhœa always present. Watery discharge above mentioned.

Physical Examination.

Patient is a short stout woman, old-looking, very anæmic, and with a sallow complexion.

External pudenda.—Deep pigmentation seen on the labia majora and on the skin over the perineal body.

Per vaginam.—Orifice only admits one finger. *Walls* are absolutely smooth, very moist and have lost their rugæ. *Cavity* large, and the walls stretched and separated by a large mass lying there. *Roof* cannot be reached owing to the existence of the tumour in the vagina. The finger can be passed all round the swelling, between it and the vaginal walls, but neither the vaginal roof nor the cervix uteri can be felt.

Bimanual Examination under Chloroform.

The uterus is easily palpated in the pelvis, lying anteverted and not much enlarged. No inversion of the uterine wall could at any part be made out.

Use of speculum.—By introducing a Sims' speculum one sees the lowest part of a large pink mass lying in the vagina, and about an inch distant from the orifice. To the touch this mass is not hard, but rather elastic. In several places arterial pulsation can be felt, and the vessels of the capsule of the tumour can be seen ramifying over the smooth glistening surface in which no ulceration is present.

Diagnosis.—Fibroid polypus expelled into vagina.

Remarks on Case II.

This case is typical in many respects of the ordinary polypus with a few slight exceptions. The diagnosis was easy. You had the tumour in the vagina and the uterus above. There

was no opening in the tumour, and it was free all round. The vaginal walls were normal in position. You thus excluded in an elementary way, prolapsus uteri, cervical hypertrophy, vaginal tumour and uterine inversion.

You may get with a polypus, especially if it be sarcomatous, an inversion of the uterine site caused by the traction of the pedicle, and this must be kept in mind. This polypus was originally in the uterine cavity but has been expelled without pain. Sometimes a polypus takes a long time to be expelled from the uterus, and usually severe pain and flooding are prominent symptoms. In this case, I imagine, the polypus may have been expelled when small and grown to its large size while in the vagina. This would also xplain the relatively less hæmorrhage this patient had, as the endometrium would be less hypertrophied.

The hæmorrhage in such cases may be excessive and so prolonged that I have known a case come into hospital *in extremis* and die with a polypus in the vagina.

The *treatment* in such a case is very simple. The old plan or idea was to separate the polypus at the narrow neck it usually has, either by means of an ecraseur or galvano caustic wire. Sometimes also, it was incised spirally and drawn out in extended fashion. The necessary procedure is very simple. Expose the lower part of the polypus by introducing one or two short-bladed specula into the vagina. Then lay hold of this end with a volsella, catching the tumour posteriorly as far as possible. You now clip away with stout scissors parts of the polypus, each as large as a walnut. In a short time you can thus diminish its size considerably. It soon begins to slacken in the vagina and you can get at the pedicle. This one was low down in the uterus and not thick. It readily yielded to a twisting movement, and thus the diminished mass was easily drawn out. The perineum was torn unavoidably as the tissues in such cases are weak. At the bottom of the perineal tear it was interesting to see the strap-like external sphincter running across. In suturing the tear, catgut is best, and the suture should begin at the vaginal surface and proceed backwards. Sometimes you may have the pedicle attached higher up, even at the fundus uteri. You should in such a case make an incision from side to side below the

anterior fornix, and push up the bladder as far as you can. You now split the anterior cervical wall and the uterine, if necessary, as well, in the middle line—you will soon thus get high enough to twist or tie the pedicle safely. Of course you grasp the lateral cervical walls as you split, with volsellæ. Avoid opening the vesico-uterine pouch of peritoneum. Finally you stitch the divided surfaces with catgut.

CASE III. Severe menorrhagia due to multiple fibroids treated by double Oöphorectomy.

Margaret B., aet. 41, single. Occupation, laundress. Admitted to Ward xxxvi. on April 16th, 1901, complaining of a lump in the abdomen which she had noticed for ten months.

History.

In June 1900, after a very hard day's work, she was seized with a sharp pain in the abdomen accompanied by sickness. She was confined to bed for fourteen days with a dull pain all over the abdomen, but especially below in the hypogastrium. After the rest in bed and the application of hot fomentations, she got well and went about her work again. This attack came on a week after her menstrual period was over.

Several days after this, while taking a bath, she noticed that her abdomen was unduly prominent and hard. She does not think it has become more prominent since she first noticed it, and as it gave her little inconvenience she did not seek medical advice. For the last three years she has suffered from menorrhagia—her menstrual period being of seven days' duration and very profuse. Previously the duration was three days and the quantity small.

On April 10th, 1901, she was again seized by a pain in the abdomen with sickness very similar in character to the attack of June 1900.

The pain on this occasion was not so severe as formerly, but the sickness was more persistent, and she was admitted on the 16th April to the Ward.

Sexual History.

Normal menstruation began at the age of thirteen. *Type*—twenty-eight day. *Duration*—three days. *Quantity*—normal.

Morbid.—Menorrhagia present for the last three years, and with altered type, twenty-one days for the last three years. *Duration*—seven days. *Quantity*—very profuse.

Dysmenorrhœa.—Pain felt three days before the discharge

is seen, and lasts throughout the period. The dysmenorrhœa is not, however, very severe.

Intermenstrual discharges.—No metrorrhagia. Slight leucorrhœa always present.

Local Functional Disturbances.

Bladder.—She sometimes has to get up three times at night to pass urine, and passes urine frequently during the day.

Rectum.—No pressure symptoms present.

Pelvic nerves and muscles.—She complains of pain down the back of the right thigh, and slight weakness of that limb.

General Functional Derangements.

Nervous system.—She has always been a nervous woman, and especially so for the last three years.

Physical Examination.

General appearance and configuration.—She is a quick, intelligent woman, with rather an anxious expression.

She is very anæmic, as is seen in the yellow pallor of her skin and the blanching of the mucous membranes. She is fairly well nourished, and muscularity is good.

Abdomen.—On inspection the abdomen is seen to be unduly prominent below the level of the umbilicus; this is more marked upon the right side. Several dilated veins are seen in the skin of both flanks.

On palpation the abdominal wall is fairly thick. In the hypogastric region a marked resistance can be felt in the form of a hard nodular mass.

This hard mass can be traced out into the iliac region as far as a vertical line bisecting Poupart's ligament. This mass is connected with that in the hypogastric region, but feels as if it budded off from it. To the same distance resistance can be traced upon the left side, but here the swelling is not so distinct to the touch. The upper border of the central mass reaches to within two finger-breadths of the umbilicus.

Slight pain is complained of when the tumour is palpated. It is very hard, irregular, and freely movable.

Percussion.—A dull note is got all over the tumour; elsewhere there is resonance.

Auscultation.—Nothing can be heard.

Mensuration.—At level of umbilicus, 31 inches; two inches below level of umbilicus, 33 inches; ant. sup. iliac spine to that of opposite side, 11 inches; right ant. sup. iliac spine to umbilicus, 6½ inches; left ant. sup. iliac spine to umbilicus, 6¼ inches.

Per vaginam.—*Orifice* only admits one finger. The hymen is present, and is unruptured.

Walls and cavity.—Walls moist, warm, and rugæ well marked. Cavity not roomy.

Roof.—Through the fornices no resistance felt.

Cervix.—Os externum felt as a transverse slit. The cervix is very hard, but freely movable.

Bimanual Examination under Chloroform.

The mass felt in the hypogastrium occupied the position of the uterus, and was found to be that organ in a "fibroid" condition. It was freely movable. The ovaries and Fallopian tubes could not be palpated.

Diagnosis.—Multiple uterine fibroids, sub-peritoneal and interstitial.

Progress.

The first menstrual period in hospital lasted eight days, and was very profuse. When it was over she was put under treatment with ergotin grs. ii., and extract of nux vomica gr. ¼, three times a day. Her next menstruation in May was of six days' duration, and not nearly so severe each day. Hitherto she had been entirely confined to bed. She now left for the convalescent home, and returned in a month for operation.

Operation.

Double Oöphorectomy was performed on July 1st, 1901. The ovaries were easily accessible, and easily removed.

At the operation the tumour was felt to be as it had appeared on examination from without. For ten days a bloody vaginal discharge persisted; it was stopped, and did not return. The stitches were removed on the eighth day, and the wound found to be firmly healed. It is now five weeks since her last menstruation, and no signs of a subsequent one have been seen.

The ovaries when removed were found to be healthy and functionating, containing in their substance recent corpora lutea.

In the broad ligament, however, an abnormal condition was noted. On one side, growing from the tubules of the parovarium, was seen a single small parovarian cyst about the size of a pea, while on the other side, two such cysts of similar size could be seen in the same position.

Remarks on Case III.

This case is one which indicates well the occasional improvement in symptoms brought about by palliative treatment for fibroids of the uterus even though they be multiple. Having

been kept constantly in bed and under the action of ergotin this patient showed a difference in her menstruation not only in its duration but, what was still more marked, in its quantity.

There is no doubt that among the well-to-do such treatment may be tried at first, as under such circumstances rest can be so easily secured.

Among the poor, however, palliation cannot be satisfactorily carried out. If the case be at all severe, operation is usually found to be necessary.

There are two operations that might be performed in a case such as the above—Oöphorectomy and abdominal hysterectomy. Of these Oöphorectomy is much the more simple, although it does not always cure. It was, however, quite a justifiable operation in this patient, as she was forty-one years of age and chose it in preference to total extirpation. One must keep in mind, however, that it may not be possible to remove the ovaries. We therefore had her consent to try total extirpation if necessary. The ultimate result remains to be seen, so far as her menorrhagia is concerned. Since the operation there has been no bleeding.

CASE IV. This fourth case was of a very different type, unusual and difficult to a degree.

Janet M., æt. 33. Single. Admitted to Ward xxxvi. on 29th April 1901, complaining of a swelling of the abdomen of two years' duration.

History.

She first noticed the swelling in the abdomen two years ago. Since then it has grown gradually larger without causing her any inconvenience beyond its bulk.

Of late, even, the only discomfort present was frequency of micturition, necessitating her getting out of bed three or four times during the night. Just before admission, however, she began to suffer pain in the right side, with sickness and vomiting, and she therefore came to the Royal Infirmary.

Previous health has been very good. *Family history* satisfactory. *Social conditions and habits*—has a good home and takes plenty of good food.

Sexual History.

Menstruation began at the age of 13. Type, 28 days; duration, 3 days; quantity, moderate in amount.

Dysmenorrhœa is present, but only to a slight extent. For the first year menstruation has been irregular. Sometimes a period of amenorrhœa for two months would occur; sometimes menstruation took place every three weeks. At present the quantity is scanty, lasting only one day. Dysmenorrhœa is present when the discharge begins and is relieved when it has gone on for a few hours.

General Functional Derangements.

Circulatory System. — A rough presystolic murmur and a loud systolic murmur are well heard at the apex beat. The systolic element can be traced into the axilla and round to the inferior angle of the left scapula. A marked reduplication of the second sound is heard in the pulmonary area.

General Appearance and Configuration.

Patient is thin and poorly developed, apathetic and of rather a nervous temperament.

Physical Examination.

Abdomen.—Inspection.—The abdomen shows a well-marked swelling which is fairly uniform. To the right side and a little below the umbilicus a slightly more marked protrusion is seen. There is very slight movement of the abdominal wall with respiration.

Palpation.—The swelling is felt to be very tense and hard. It feels lobulated upon the right side. No pulsation is present, and slight pain is complained of when palpation is made deeply upon the right side.

Under chloroform.—The tumour remained as tense as before, and a distinct lump could be felt lying in the left iliac fossa on the surface of the tumour, but to all appearance separated from it. This lump is oval, with its long axis in the transverse axis of the abdomen, and feels like an ovary much enlarged. It is about the size of a hen's egg, and has a smooth surface.

Fluctuation could not be made out, and no thrill could be elicited.

Percussion gives a dull note all over the abdomen to within three inches from the ensiform cartilage above and also in the flanks posteriorly. In these areas the note is clear.

Auscultation.—No souffle could be heard.

Mensuration.—At the level of the umbilicus, 31 inches.

Per vaginam under chloroform.—The cervix is pulled up well out of reach, and the vaginal canal is very tortuous and narrow, especially in its upper part. No part of the tumour could be palpated by this examination.

Remarks on Case IV.

In this case the peculiar points were—

(*a*) The apparent disappearance of the portio. At the roof of the vagina there was merely an aperture.

(*b*) The ovary, enlarged and lying to the soft side.

(*c*) The uterus, not enlarged, felt (more distinctly before operation) about the level of the navel.

(*d*) The feeling of fluid tension in the main tumour, which was really solid.

I diagnosed here an extra-peritoneal or broad ligament cyst, displacing upwards into the abdomen the uterus and left ovary. As a matter of fact, it was a solid tumour springing from the right upper uterine corner, and, as we shall see, developing at its base between the layers of the meso-rectum and meso-sigmoid. In order to make matters clear I had better now narrate what I found on operation. I did not find exactly what I expected, and I had accordingly to do something much more severe than I had anticipated. This is occasionally the fate of the abdominal surgeon, sometimes the misfortune of his patient. On opening the abdomen by a large incision I exposed the tumour, and found the uterus, not enlarged, lying upon its anterior surface at the level of the umbilicus. The soft ovary was seen flattened out at the side with the broad ligament tense, and with abundant veins passing to the left side of the pelvic brim. On the right side were the corresponding broad ligament and ovary.

I accordingly tied the left ovarian and round ligament arteries, and, after dividing the broad ligament between these ligatures and a clamp, felt for the left uterine artery at the lower part of the uterus. This was easily made out and tied. I then cut across the uterus transversely, stopping short of the right side, and running up a little so as to get the right uterine artery higher up, and to more certainly avoid the ureter. Clamping successively the right uterine, round ligament, and ovarian arteries, I cut away below. The clamps were removed after silk ligatures had been applied. The tumour, however, was not freed, and on further examination I found it springing from the right upper corner of the uterus, and developing between the layers of the meso-rectum and the meso-sigmoid

in the most extraordinary way. This unfolded peritoneum surrounded its base almost entirely, and the bowel coursed down upon its left side, closely hugging it. I clamped the peritoneal sheath as carefully as possible, but ultimately had to dissect off a thin layer of the tumour itself so as to avoid the disaster of opening into the rectum. When the whole tumour had been thus removed I had a capsule about the size of a cup with rectum at its base, and peritoneum and layer of tumour for sides. What was to be done with this? I united the edges as well as I could, but a continuous suture could not be applied to bring the inner surfaces together.

Oozing went on from the capsule, and I had therefore to use the peritoneal tampon of Iodoform gauze we owe to Mikulicz. You first make a tube or sac of Iodoform gauze, and have a strong silk thread stitched into its base. This sac is passed deeply into the abdomen, and then plugged with Iodoform gauze in strips. A plug or tampon such as this was pressed down on the capsule, and the mouth of the tampon sac lay at the lower angle of the wound where a stitch was left untied.

The patient rallied well from this severe operation of about two hours' duration. I removed the inner gauze strips of the tampon in twenty-four hours, and a few hours later took away the gauze sac and carefully closed the abdomen by tying the stitch.

For the first week the patient did well. After that her pulse and temperature began to rise and be irregular. I knew some mischief would happen in the sac, as the bowel, unprotected by peritoneum, lay at its base, likely to infect any blood clot. Pus, therefore, came away from the lower angle of the wound, and coincidently the patient's temperature and pulse fell to the normal, and remained so. Evidently the peritoneal tampon had shut off the general peritoneal cavity from its track, and thus saved her from a serious peritonitis. The patient is now recovering, and owes her life, I have no doubt, to Mikulicz's peritoneal tampon.

In this complicated case you can see again how the ligature of the ovarian round ligament and uterine arteries on each side practically controlled all bleeding.

INTRODUCTORY CLINICAL LECTURE ON THE STUDY OF INDIVIDUAL CASES

By CHARLES W. CATHCART, F.R.C.S.,
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WE are all, I think, apt to forget, and some of us perhaps slow to understand, the importance of an idea in influencing the lives of men, by guiding their thoughts and directing their energies. The first rough ironclad steamer introduced in the war between the Northern and Southern States of America was only an idea put into practice; a method of protecting ships which might have been employed sooner than it was; yet this idea has altered the naval ship-building yards of the world; revolutionised naval artillery, and influenced the training of the sailors in more ways than can be easily followed out by a mere landsman. Or again, co-operation in farming is only an idea, yet its adoption in certain districts in Ireland is said to have completely altered the standard and methods of work in those districts, and to have greatly benefited the dairy producers there and the dairy consumers supplied by them in all parts of the country.

In the same way the direction of your thoughts and energies and the results upon your future efficiency as practitioners of medicine, will very greatly depend upon the ideas with which you enter upon your work as students of disease at the bed-side.

For this reason I have thought it well to speak to you to-day about what I hope will become one of your leading ideas in the study of Clinical Surgery, if it is not that already—the *value of the personal study of individual cases.* As some of you are probably aware, this is no new idea; if it were, I would have more hesitation in urging it upon your notice. Its importance has been thoroughly well recognised from Hippocrates downwards, but none the less does it require to be emphasised at the present day, especially in connection with the subject of Clinical Surgery. Simply as a matter of experience in teaching and examining students, I find that the majority fail to grasp the importance of this way of looking at their work in Hospital. They are so accustomed to sit upon the benches and write notes of what they are expected to remem-

ber, that they seem to find it very difficult to assume another attitude of mind when they come face to face with disease. Moreover they appear to have a very inadequate idea of the scope of modern Surgery. The operative or manual part of it is so striking, and occupies so much of our time, that the scientific side of it is apt to be lost sight of. There was once a time, of course, when mere Cheirurgia or handwork accurately indicated the functions of the surgeon, but these days have long passed. The surgeon is no longer the operating assistant to the physician, who calls for his services when occasion requires. Even before the days of John Hunter, Surgery had become a science quite as much as an art. It deals, of course, largely with operations, but the question is not merely how, but when to do them, and still more how to do without them. Let me illustrate this latter point by an example. The late Thomas Keith, a former member of the staff of this Infirmary and of world-wide reputation as an ovariotomist, had obtained a most remarkable success in the operation of hysterectomy for uterine fibroids at a time when the results of most other operators, equally skilful, were very poor. As soon as he heard, however, of the promising results of Apostoli's treatment by electricity of these same cases, he enquired thoroughly into it and, having satisfied himself of its value, became one of its most strenuous advocates. This showed an open mind actively searching for knowledge in the interests of his patients, and there can be no doubt that it was just this very quality that both brought him success in the operation and eventually led him in great measure to give it up.

Science has been defined as exact knowledge, and in Surgery as in everything else, this "knowledge is power." Now the knowledge required by a student of Surgery, whether his standing is reckoned by weeks or years, is of many kinds. The subjects of Anatomy, Physiology and Physics are the most important preliminary studies, but what I wish to emphasise to-day is that besides them we require to be constant students of disease itself at the bed side. Our junior students come to us with little or no knowledge of Anatomy or Physiology. That is a disadvantage in many ways, but it is not an insuperable one to profitable work at the bed side. I would have them, therefore, instead of being discouraged, to understand

that they can from the beginning acquire really valuable knowledge in the surgical wards of the Infirmary if they will only set about it in the right way.

What, you may ask, is the Knowledge and what is the Way?

It is a Knowledge of the facts of disease; of its course and symptoms, its varieties, the methods and results of treatment, and, to a considerable extent, of the morbid changes produced by it. All this can be studied with profit, even by junior students, and the very limitations which their ignorance of Anatomy and Physiology entail, will be a stimulus to their study of these indispensable subjects in the future.

And the Way is to learn at first hand through their own senses. Recollection of what a teacher says is one thing and valuable enough sometimes in its way, but actual knowledge acquired by personal observation is a totally different thing, on an infinitely higher platform. Hence I cannot too strongly impress upon you the need for gaining knowledge in the wards of the Hospital through the only possible avenues of your own senses, and for cultivating wisdom by the only royal road, of reflection upon the knowledge thus acquired—"by constant watching wise."

But granting that we must study our cases, there are two possible ways of so doing, by a careful and minute study of a few cases or a superficial study of a great many. There ought to be very little doubt which is the better plan, but as a matter of fact there are a good many who do not seem to be quite clear about it. Let me give you two examples of the advantage of concentration of attention, both taken from within the sphere of medicine. About twenty years ago Zoology was taught by a series of lectures upon the animal kingdom in general. I remember being wearied to death by the classifications of the Cœlenterata though I had not an idea what one of them was like in real life. Since Rolleston and Huxley led the way, students all over the country have been taught by being thoroughly grounded in certain individual animals selected as types. Attention has been concentrated on these and the work has been largely practical, and from them the study of other allied animals has been found comparatively easy. Again you hear, and probably will all your life continue to hear, a great deal about Specialities and Specialists in Medicine and Surgery. Opinions favourable and unfavourable are freely expressed, but this broad conclusion seems to me to

be certainly true, real progress in knowledge and, along with that, real progress in treatment, has always been associated with Specialism. Take the Specialities which are represented in our own Infirmary—the Eye; the Ear, Nose, and Throat; the Skin; the surgery of the Pelvic Organs in women. As soon as men gave themselves up to the special study of the diseases of these regions, knowledge began to improve, to expand, and even to throw light upon other branches of the great healing art. We need not enter into many side questions associated with Specialism; the advantages it illustrates of concentration of attention are undoubted.

Unfortunately, however, there are a good many difficulties in the way of the careful study of individual cases in the surgical wards of the hospital. A great deal of time is taken up in operations and dressings, and we have to be strongly impressed with the need of this kind of work in order to carry it out. Let us consider what we can do in the matter. First of all, although we cannot so often sit down and work right through a case, as is done with so much advantage in the medical wards, we can take up portions of a case; the history, local condition, the principles of treatment, the progress, the state of the parts removed, and so on, on some particular day, leaving other portions for another day. Then I think we might sometimes arrange to have a clinique for the study of one or two cases, conducted either by Mr Dowden or myself, while some comparatively unimportant operation was being performed. Students waste a great deal of time in the operating theatre. The focal distance of the human eye for near objects is ten inches, and in many cases it is quite impossible for them to see anything which can be of any use, owing to the distance they have to be away from the patient. Moreover it generally happens that what little they can see is only possible at considerable intervals in the whole course of the operation. While, therefore, we will always try to show and explain as much as we can to those present, consistent with getting the patient as quickly as possible back into bed, I shall not forget that there are often better ways of occupying the students' time than sitting on the benches of the operating theatre.

There is one aspect of Surgery which I think students have neglected too much—surgical Pathology. You may even

be tempted to think that it is not worthy of your study at all in Hospital, that it will be sufficient to learn something about the structure of tumours and other surgical affections in the class of practical Pathology, but, I can assure you, you are making a great mistake. Having heard the clinical history of a case, studied its symptoms and taken a personal interest in it, you will naturally be in a far better position to appreciate the importance of the morbid changes produced by the disease than you could be in examining such a specimen detached from its clinical surroundings in a Class-room or a Museum.

A knowledge of surgical Pathology is not the only foundation for rational treatment, but it is one of the most important pillars of it. I shall therefore consider that you have not properly studied any case until you have made yourself familiar with the morbid changes recognisable when any specimens have been obtained. The naked eye specimens will be set aside preserved by the formalin method. Microscopic sections will be cut with the freezing Microtome, and both will be accessible to those working in the wards.

But if you are to make all the personal observations which I have tried to indicate as advisable, you will soon find it necessary to have them written down. In fact the effort to record them will make you observe them better. Sir James Paget, in his preface to his "Studies of Old Case Books," after frankly stating that, owing to the improvements in knowledge and appliances since many of the observations were made, they had lost much of their original value, goes on—"Thus, as one looks through volume after volume, they seem to prove nothing but a waste of time, till one reflects that the present use of case books is no just estimate of their value in past years. For to say nothing of the materials they have supplied for work already done in lectures or in books and papers published at various times, they were among the very best means of self-education. The habit of recording facts is nearly essential to the habit of accurately observing and remembering them. That which we intend to record we are bound and may be induced to observe carefully, and the very act of careful recording is nearly equal to a renewed observation." We may also in this connection remember Bacon's aphorism that "writing makes an exact man."

But while there can, I think, be no doubt whatever as to the value of taking notes of personal observations, there are certain objections which have been urged against the practice which demand our attention. It is said that a note-book is out of place in a Hospital, that the student's time should be occupied in using his senses not in writing, which is more appropriate in a Lecture-room. This objection arises from confusing two different kinds of note-taking. That which is fostered in Lecture-rooms, mere taking down of opinions and statements to dictation without the exercise of judgment, is bad in a Lecture-room and worse in a Hospital; but a brief noting down of what has been personally observed, or understood after explanation, is a help to observation and a stimulus to enquiry.

Another objection, and this is a real one, is the difficulty of referring to the notes afterwards. With the help of careful indices a great deal has been and can be done to make consecutive notes of various cases in a large note-book available when wanted.

But there is a better way still in the use of what is known as the "Card system." This consists in arranging the material itself in accordance with a pre-arranged plan, and thus doing away with an index in the ordinary sense of the word. The term "card" has been applied to the system because cards have been found convenient to handle, but the essential part of the system is not the substance upon which the notes are written, but the method of arranging them. This consists in having "a place for everything," so that all the papers referring to a given subject can be found together when wanted, with less trouble than one formerly had in looking up an index. The system has been found of the greatest value in large offices of all kinds, in the formation of Museum and Library catalogues, and in many other ways, and it seems to me to offer a solution of the difficulty with regard to hospital notes which has troubled me for long. About three years ago I drew up a scheme for applying this system, and recommended it to the women students in Wards V. and V.A. A certain number tried it and found so much benefit from it that they carried it out in the medical wards of their own accord. Since then, with further experience, I have made several improvements upon the first scheme, and have therefore all the more

confidence in recommending you to try it. Messrs A. & D. Padon, 13 St Andrew Square, have procured for me, after some trouble, small portfolios or "files" with thirty-one pockets. To go along with these I have had printed a scheme or index for the classification of surgical diseases. The notes, written on sheets, are marked by the student in accordance with the index and arranged in the pockets. By this means similar subjects are grouped together and found when wanted with the greatest ease. A little trouble and care will of course be necessary with this as with everything else that is worth doing, but I am quite sure that those who will take that trouble will be amply rewarded by the satisfaction they will have in their work, and the sound progress which they will feel that they are making.

But while I have dealt so long with the scientific side of your hospital training, I do not wish you to suppose that the practical side of it can afford to be neglected. Quite the contrary. The same general principle of the importance of personal work applies just as much to the use of your hands, as it does to the use of your brains and of your senses. I am strongly persuaded that a student must not only see things done, but he must do them himself as far as the interests of the patients will allow. Supervision will be necessary at first, but we shall very soon find out who can be trusted and who can not. It will be my own guiding principle, and I believe that of those who are working along with me to try to hand on responsibility as much as possible, feeling that in standing aside in order to give those below us the best and quickest means of coming up to our own level in any accomplishment, we shall be doing the most in our power to extend the benefits of our healing art.

As perhaps the most emphatic way of summing up the foregoing remarks, I shall conclude by telling you how I propose to test your knowledge at the class examinations. Besides a written paper upon subjects which have been discussed at lectures, you will have naked eye and microscopic specimens put before you, and you will be expected not only to say what they are but to give the clinical history of the patients from whom they were taken. Instruments will also be shown, and you will be asked to explain the uses to

which they were put during the session, as well as the purposes for which they are usually applied. You will probably also be asked to apply some bandage or splint. As the medical regulations require you to attend the ward visits no less than the lectures, I shall feel myself quite free to ask questions about what has been seen in the ward visits and cliniques, in addition to what has been shown at the bi-weekly lectures.

HEREDITY

By ROBERT PARK, M.D., M.R.C.V.S., &c.
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THE greatest intellectual trouble of this generation is the fact that the symbols of ideas, words to wit, vary so widely in signification owing to natural denudation or accretion of meaning, to artificial variations, to adaptations to technical or professional need, or to vicious usage to suit the art of the sophist or diplomatist. In addition to all these, one has to exert a continual awareness against the mental bias of master beliefs, apt to impart unconscious elements to the simplest words and ideas. The word heredity has not escaped this, and conventionally, now means the transmission of some actuality, having been so much more used in connection with legal transactions than philosophical or medical theories. Nevertheless, it is obvious that, in both law and in fact, heredity may be in potential rather than in actual. An heir may have a long time to wait before "coming to his own," and may even predecease the event, and the latter may only accrue to the next or the next again in succession. I would point out that an exactly parallel eventuality must be recognised when we use the word in a biological sense, and that the term is a purely relative one representing neither an "entity" nor a "principle," but merely the event or outcome of a certain concentration of biological factors.

These factors are unquestionably chemico-physical. It appears to me, anyhow, that a fruitful study of heredity depends upon the recognition of this scientific postulate to begin with. We must be guided by facts, and not by pre-conceptions, however ancient and hoary.

The first fact is that the Cell is the primordial unit, and is

intelligent; whether consciously or unconsciously doesn't matter. The second is that this intelligence, though apparently superseding, is merely a delegation or specialisation of the fundamental *ἐνέργεια ἀκινησίας* or cosmic force.. The cell is to be regarded not as a mere pollen blown by the wind, but as a pollen taking more or less advantage of wind, or circumstance, to effect a favourable location. It is, therefore, as a unit, in ceaseless reaction with its environment. As Max Verworn, quoted by Haeckel,[1] writes, "Hence the psychic phenomena of the protists form a bridge that connects the chemical processes of the inorganic world with the psychic life of the highest animals; they represent the germ of the highest psychic phenomena of the metazoa and of man."

I must be allowed to hammer this point somewhat, for this delegation of energy lies at the basis of all evolution, and the idea thereof must be firmly assimilated with a view to the ultimate comprehension of phenomena of heredity. It would appear to be a verified fact that even within the limits of the protist world, the cell-soul presents a long series of stages of development from the most simple and primitive to a comparatively elaborate activity;[2] and all this takes place on the line of a further delegation of specialised energy, and this in harmony with the physical and also, necessarily, psychological principle of economic action.

"Economic action," certainly, but let it be remembered that there is no action without reaction, and that both are conditioned by circumstance, and that this is as true of the molecular structure as of the molar mass. It is frequently forgotten, and, moreover, all our ideas with regard to action are more or less overshadowed by the anthropomorphic conceptions of causality and effect. It need be no reflection upon medical teachers and practitioners that this should be so. Very few of us can disentangle ourselves from our social *milieu*, so as to put ourselves in the position of being unaffected by conventional prejudices and conceptions. The social and financial factors are clearly too predominant at the present day, and are truly making the simplicity of life, so necessary to the philosophic physician, almost impossible. I

[1] "The Riddle of the Universe," p. 155. Watts & Co., London.
[2] *Loc. cit.* p. 156.

do not include the religious factor, because I regard it as an element of the others. But they form the consideration which detains us. The observed facts of everyday life do not prevail against preconceived ideas, especially when these subserve the purpose of vested interests; for as much as they have their own theory of them, and it is accepted because more agreeable to the preconceptions. And concepts play as important a rôle in scientific reasoning as facts themselves; yea, perhaps even more so, for individual apprehension of the facts is necessarily very limited, even at the best. Ideas, for the most part, and not facts, form the staple of reason; these are they which are compared and which form the data of induction and deduction.

Consider the term "inherent" or "innate" for instance. Why still "inherent," after it has been discovered[1] that "every reaction is mutual and directed to contrary parts"?[2] What is inherent, or what is inborn? In reality naught save what was in the primitive cell, augmented by the potentials of all the other cells which it has associated around it, and which potentials *are relative and reciprocal* to the primary and to the general environment. In the phyllogeny the biological fact of spontaneous movement, and the psychological fact of sensation were synchronous: in the ontogeny it is otherwise, for the latter rehearses shortly an infinitely prolonged evolution, in the course of which that which was common to the whole has by successive delegations become variously specialised and organically functioned by the part. It has never been shown, albeit, that, in either case, *any new element compears at any point.* The primary potentiality of the inorganic has simply, by evolution naturally, become the multiplex potentiality of the organic: and synchronously comparative inertia has become tendency towards cumulative activity up to a culmination, when the reverse process of involution supervenes. Much that was consciously achieved in the phyllogeny, is unconsciously effected in the ontogeny; conscious emotion involving attention (action), and this necessarily involving *inattention* (reaction) *to all else beside.* The positive and negative are inseparable, save in the process. As the higher nerve centres evolve into activity, the lower retire towards inertia; and in the individual

[1] Viz., by Sir I. Newton.

[2] *Vide* "Some Unrecognised Laws of Nature," by Singer and Berens. p. 246, published by John Murray.

when the former become weak or lose control, the latter become turbulent. All is relative.

The whole process is physical, extremely complex, and very slow. Says Weissmann, "I should wish to assert more definitely than Darwin has done, that alterations in the conditions of life, together with changes in the organism itself, must have advanced very gradually and by the smallest steps, in such a way that, at each period in the whole process of transformation, the species has remained sufficiently adapted to the surrounding conditions. An abrupt transformation of a species is inconceivable, because it would render the species incapable of existence. If the whole organisation of an animal depends upon adaptation, if the animal body is, as it were, an extremely complex combination of new and old adaptations, it would be a highly remarkable coincidence if, after any sudden alteration occurring simultaneously in many parts of the body, all these parts were changed in such a manner that they again formed a whole which exactly corresponded to the altered external conditions. Those who assume the existence of such a sudden transformation overlook the fact that *everything* in the animal body is exactly calculated to maintain the existence of the species, and that it is just sufficient for this purpose; and they forget that the minutest change *in the least important* organ may be enough to render the species incapable of existence."[1]

I have underlined the quotation in two places owing to the significant bearing which they have for the understanding of heredity. If the minutest change in the least important organ can be enough to render a species "incapable of existence"; what, then, can we conceive as to the most important organ in this relation—viz., the germplasm? Such modification of it as might affect species must be wholly inconceivable. Nevertheless such modifications must take place frequently *through the medium* of the soma, of which it is an organ. It may be assumed, albeit, that only exceptional conditions of the soma will affect it; conditions exceptional by intensity, or prolongation, or frequency of repetition, and evoking ultimately states of the nervous apparatus as a neces-

[1] Weissmann, "On Heredity," p. 264, 265. The Clarendon Press, 1889. The italics are mine.

sary preliminary. Otherwise the organ of the species would be at the mercy of every wind that blew, every somatic modification. We know that this is not the case.

We know also *now* that the organic world is a psychological unity. Howsoever it emerges, intelligence (conscious or unconscious) appears to pervade every chemico-physical act, as well as every so-called vital act and every purely psychic act, such as the psychosis of a general concept. Says Haeckel,[1] "All the phenomena of the psychic life are, without exception, bound up with certain material changes in the living substance of the body, the protoplasm. . . . In man and the higher animals, in accordance with the division of labour of the organs and tissues, the psychoplasm is a differentiated part of the nervous system; the neuroplasm of the ganglionic cells and their fibres. In the lower animals, however, which have no special nerves or organs of sense, and in the plants, the psychoplasm has not yet reached an independent differentiation." That is all the difference in this regard.

Then, and thus, we know that there is an unbroken material nexus throughout all animate nature from the first protistis to the first vertebrate, and from it throughout the zoological series up to man. By "material," of course, is here meant "substantial" — *i.e.* of and belonging to that which we perceive and cognise under the phenomena of matter, and force or energy. It is really not pertinent to the subject in hand to go deeper than this. Sufficient it is if we grasp the idea in its fulness—viz., "the potentiality of all things."

Further, and this being so, it must be patent that the germ and the sperm must be, by and through the complexity and consequent chemico-physical instability of the protoplasm and psychoplasm thereof, by far the most modifiable and variable of all substances. Subject, like the rest of matter, to all the known and unknown *laws* thereof, environmental changes which would not affect more stable forms, such as elementary forms or their immediate oxides, would immensely affect these. Hence, we observe in the very lowest forms and from the very first, the unconscious psychism of nature lending

[1] "The Riddle of Creation," p. 111. Watts & Co., London.

itself to the perpetuation of microscopic species by astounding devices either of environment, or prolificity, or alternation of generation, or spore formation, or germ or sperm protectives; until, in the mammal consummation, we have the most perfect apparatus of protection conceivable, and so, a germinal and spermatic organisation less subject, under normal circumstances, to environmental disturbance, or modification even by the immediate soma, than in any other form. We may readily agree, therefore, with Dr Archdall Reid, that the theory of evolution teaches, "as the only hypothesis scientifically tenable, that life originally arose, by a process of evolution, from that which was non-living; that, under conditions of which we are ignorant—of moisture, or of heat, light, electricity, or other protean forms of energy—non-living compounds did in the beginning of life overpass the border space which divides the living from the non-living, and become living beings."[1] The process of conversion of the non-living into the living goes on under our eyes daily in the process of converting more or less stable so-called *dead matter* as food into higher and more unstable elements of living tissue, the most unstable being the most complex; and so, either kinematically or potentially, the most all alive. As type of the former, the grey neuron is adduced; and of the latter, the germ and the sperm.

The acceptance of the evolution theory implies that natural selectivity[2] (whereof sexual selectivity is a mode), is that mode of psychism whereby the latent potentialities of matter eventuate in animate species, and these latter diverge into varieties under varied environmental conditions. The varied condition is the action or stimulus, the variation the reaction or event.

The check to indiscriminate variation lies in inter-breeding, which tends towards a specific mean; and the check to deterioration of the specific mean again in isolation. The tendency towards debasement of the specific mean, where interbreeding is carried too far, is such, that some have thought that isolation is the necessary prerequisite of all evolution, a *sine quâ non.*

[1] *Vide* "The Present Evolution of Man."

[2] "Selection" is the term used by Darwin, but as it implies the idea of an operating agent, and Darwin never meant this, I conceive that it is time that it was dropped. Its use has led to many misconceptions.

Dr Archdall Reid, however, very properly points out[1] that "evolution proceeds not on lines of traits, however favourable, which occur infrequently or abnormally, but on lines of traits common to all the individuals of the whole species,—that is, in which *every* individual rises *above* or falls *below* the specific average"; and . . . "that generally those individuals who, on the whole, vary fortunately as regards these traits, survive and have offspring." Further, "what is not possible in absence of isolation, is evolution upon diverging lines."

So far, then, the question is clarified, and the rôle of isolation, as a factor in determining the possible heredity of any particular trait, is put in evidence. That is to say, the trait, or the acquirement, will not pass, will not be transmitted, if unaided by the condition of isolation.

The differentiation of progeny which is normal to the sexual mode of propagation is not, however, affected by isolation. Even the product of an identical copulation, if multiplex, may be very different actually and potentially: that is to say, one may be male and another female, and a third indifferent or neuter; or both being sexually alike, one may be vigorous and the other may be the subject of trismus nascentium, one may be syphilitic and the other not; or, finally, the differentiation may be so slight that an artificial means must be found for determining the same. This normal variation is termed genetic, to distinguish it from acquired modification, by zoologists; surely an awkward classification.

The beginning of the ontogeny or development of the new individual is synchronous with the fusion of the gametes (sperm and germ). The zygote[2] or protoplasmic mass which is the immediate issue of the fusion, may represent almost equally the characteristics of both parents, or one predominantly; or both subordinately and those of an ancestor predominantly; or, finally, the features of one progenitor may be salient at one stage of growth, and those of another at a later period. The product never exactly reproduces the features of either parent, and the extent to which it differs is the measure of variation (genetically).

Oscar Hertwig, Haeckel's pupil, in 1875, at Ajaccio in

[1] "Present Evolution of Man," p. 14.
[2] Sidgwick. *Cytula*, or individual stem cell, according to Haeckel.

Corsica, first found, through his researches into the impregnation of the eggs of the sea urchin, that the one essential element in conception is the fusion of the gametes and their nuclei. The nuclei of both cells, drawn together by a chemical sense activity,[1] probably akin to smell, coalesce. Only one of a million of the male gametes may succeed in penetrating the female, which at once, under normal circumstances, after fusion, sheds a mucous sweat which prevents the entry of more. The rest, under normal circumstances, must become absorbed into the circulation of the parent female. Research fails us exactly at this point. But it is a well-established fact that healthy females do not reject surplus semen, and that their doing so is *abnormal*, indicative of muscular atony, and probably mucous disease, and is a condition which causes great mental distress, and an application to the physician for relief. If and when absorbed, such a highly nutrient and forceful plasma must necessarily exert a material influence upon the female economy: an influence hitherto not reckoned with, so far as I know, in considering the question of telegony. Failing conjugation (or absorption), the gametes rapidly die and decompose, being unable to assimilate or develop, except in the rare instances recorded of the female gamete (or ovum) evolving into the parental form—a process termed parthenogenesis.

Anyhow, the mere demonstrated fact that only one gamete of a great number—say a million—the issue of one copulation, effects fruitful conjugation, reveals, synchronously, that the struggle for existence is phyllogenetic as well as ontogenetic; that is, it is pre-conceptional and antenatal as well as post-natal. Further, if the surplus semen is not absorbed and utilised in the economy of the female, it seems to be a curious and exceptional instance of lack of economy in nature; in other spheres such waste products being utilised for food, and being, in fact, a chief source of food, and a form of food most highly stimulating to the organs of sex life and so to the procreative instinct. Nothing but the fact that the study of sexual physiology has been so long taboo, accounts for the fact that our knowledge upon this point is so little precise.

It appears to be also a fact that the variability of organisms has altered, and is altering, in the direction of diminution,

[1] "Erotic Chemico-tropism."

which is another way of saying that the present zoological species have become so closely adapted to their environments that there is little room for further variation, and also that the opportunities for isolation are becoming fewer. This is all in harmony with the theory of natural selectivity, of which the mammalian form is the consummate outcome. And, embryologically, all vertebrates are by a similar embryo in outer form and inner structure, typifying the common origin of all from a common parent form. Notably the embryo of all is protected in an unique manner from environmental influences by the membranes, respectively termed amnion and serolemma, which are filled with secreted fluid. The exact period when this arrangement supervened phyllogenetically, is set down by Haeckel as the Proreptilian or Permian, when the common ancestors of all amniotes completely adapted themselves to a life on land. It was lacking in their direct ancestors, the amphibia.

Thus, environmental influences can only reach the embryo through the medium of the vascular and nervous systems of the female; and similarly, *in both male and female*, the germplasm is protected by the somatic structures, and it is only reasonable to suppose that only very intense, or very prolonged and repeated, alterations of these can effect alteration of it. And then when such has been achieved,[1] it must be seized upon by natural selectivity before becoming phyllogenetically efficient to induce variation. The rôle of the parent thus, in regard of the germplasm, is rather that of a trustee than that of testator (Bateson[2]), and it would be difficult to exaggerate the fruitfulness of this idea from an ethical point of view.

My idea, then, of a modification or acquirement in a biological sense is this, viz., "An organic somatic change induced by the repeated action either of the interior or exterior environment[3] upon the nerve mechanisms of an individual, or individuals in series cumulatively in direct line of descent." If *time* be required for the organisation of a mnemonic impress in the individual, how much more must it be requisite for such an

[1] Language here fails in giving exact expression to what takes place. We seem obliged to personify N. S. No personification is intended, it is only a conventional mode of speech.

[2] *Vide* "Materials, &c."

[3] *Vide* Féré, "Pathology of Emotions," *passim.*

impress upon the organ of species, viz., the germplasm? When thus defined it appears to me that most of the difficulty experienced by biologists in respect of the heredity of acquired characters disappears. The great bulk of these are not inherited as a matter of course, for if they were there would be no stability of species. Only those are transmitted ***normally*** which are, so to speak, approved for the species by N. S.; and which thereafter succeed in running numerous dangers in the preconceptional and antenatal struggles for existence. The exceptions to this must be classed as abnormal, howsoever numerous they may be.

I hold that transmission of acquirements, as above defined, is an absolute implication of the doctrine of Evolution. Albeit that which is acquired and transmitted is not always acquired visibly in such manner as to affect any sense; indeed, it may be recondite in the immediate parent. Such are acquired gifts of insight or sensory discrimination, or executive powers, the sign-marks of genius. Though recondite, they must have been possessed in potential by the immediate parent or parents (very often the female), else their transmission would have been impossible, as likewise their manifestation ***at a very early age*** in progeny.[1] In the case of vestigial structures each is the monument of an acquirement, viz., that of being able to dispense with the organ of which it is a vestige. *That* didn't come about in one or in fifty generations; but the same environmental condition must have held in all, howsoever many, becoming intensified with each.

But there is the case of emotional, intellectual, and physiological peculiarities, *e.g.* modes of thinking, writing, walking, clairvoyance, temperament, functional organic traits (*e.g.* rumination) which are lost or begotten in a single lifetime. The presumption is certainly that in minor but recondite degrees they existed in predecessors immediate and remote of the subjects. Not being "adaptive" such are frequently dropped in the phyllogeny; the matured psychic factor coming into play actively to determine this result.[2]

It must be admitted that Dr Archdall Reid has been doing valuable service in waking us all up and compelling us

[1] *E.g.* Burns, Byron, Shelley, Keats, Stevenson, *et id genus omne.*
[2] Vide *Nature*, Nov. 10, 1870, p. 30. Paper by A. R. Bennett.

to take stock of our conceptions regarding heredity, and so of our conception of evolutionary method as a whole. I am only at variance with him in respect that his philosophical view is too narrow, taking an inadequate estimate of the psychism in nature, and *too absolutely* rejecting the possibility of modifications being transmitted. It may be well just here to recall Darwin's position, as established beyond question by Romanes,[1] as it yields us a definite historical basis to proceed from. Alfred Russell Wallace, no doubt *laudably* dominated by a prepotent *idée fixe* had criticised the great master, and had endeavoured to read into Darwin what really was only in his own mind, wishful to make out that the master had taught that natural selectivity[2] was the *only* species-making factor in Evolution. This aroused the indignation of the late and ever to be lamented George John Romanes, and eventuated in his placing the carefully thought out conclusions of Darwin upon a footing of indisputability which otherwise might not have been attained. It is important to bear this in mind, and also the necessity of reference to Darwin on most biological problems; because one can readily understand, what was the fact, that all his inductions and deductions were made under a stupendous sense of responsibility which is removed from the modern biologist, now that the battle of free thought has been fought and won all along the line though the laurel has not been placed upon the victor's brow as yet.

Well, then, Romanes quotes Darwin thus, viz.: "There can be no doubt . . . that extremely slight changes in conditions of life sometimes act in a definite manner upon our already variable domestic productions [productions therefore with regard to which uniformity and 'stability' of modification are least likely to arise]; and, as the action of changed conditions in causing general or indefinite variability is accumulative, so it may be with their definite action. Hence it is possible that great and definite modifications of structure may result from altered conditions acting during a long series of generations. In some few instances a marked effect has been produced quickly on all, or nearly all, the individuals which have been

[1] "Darwin and after Darwin." Appendix II. p. 330.
[2] As before said I substitute "selectivity" for "selection."

exposed to some considerable change of climate, food, *or other circumstance.*" [1]

I have italicised the last item as it has a wide significance. One such is isolation: another panmixia (cessation of N. S.): and another psychism, none of which came fully into Darwin's scheme, but have been duly weighed by Weissmann, Romanes, Gulick, and many others.

From the address delivered to the British Association Zoological Section at Dover, 1899, it is to be gathered that in prefossiliferous times acquired characters were frequently and immediately transmitted, though now it is the exception rather than the rule, and for the reasons given by him, viz., that as natural selectivity proceeds, variability recedes, necessarily. Above I have set forth other considerations in support of the same conclusion. As a matter of fact the germplasm, regarded as an organ of the body, is, like the other organs, susceptible of modification; but the causes thereof NOW must either be exceedingly intense, or very special in some sense not understood, or else very prolonged, by reason of the decreased variability of species *inter alia.*

Variation, in short, is a multiple of plus or minus potentials acquired by the germplasm through the medium of the somatic affections or modifications, and only becoming actual through the operation of natural selectivity. The differentiation, then, betwixt genetic and acquired characters biologically is inept; although perhaps convenient physiologically. For all characters are in the last analysis genetic potentially, only emerging into actuality by stimulus of environmental circumstance, as Reid has so well shown. He has failed to prove, however, and no one can, for the facts are all dead against the probation, that natural selectivity is an omniscient sieve preventing all but favourable influences, emerging from functional or organic acquirements of the ontogeny, operating upon the germplasm and then finally upon the zygote.

Many of such influences have barely yet come within the purview of biologists. The common phenomenon of sexual periodicity, for instance, has, prior to Havelock Ellis' study in his "Psychology of Sex," never received attention at all. He has established the fact now indubitably that the sexual

[1] Darwin, "Variation," etc., vol. ii. p. 280.

functions of men and women come equally within the scope of that rhythm which characterises all physiological activity, and so all biological activity, and growth. Moreover the attention of the mind generally and specifically is rhythmic; and even purely mechanical phenomena tend to fall into rhythmic series. The rhythm of the cosmos therefore imposes itself upon all things cosmic, and howsoever cunningly bestowed away the germplasm will not escape. From very ancient times the periodicity of the female has been associated with that of the moon, and I have no doubt that in primeval times it was justified by the fact though no longer exactly so. It has been certainly ascertained that the further back we are able to obtain historical data, the more important do we find the part played by the moon in dominating the vital and social relations of men and women towards one another and towards their environment.[1] Ellis writes *ad hoc*, "It is a noteworthy fact that among many primitive races menstruation only occurs at long intervals. Thus, among Eskimo women, menstruation follows the peculiar cosmic conditions to which the people are subjected. Cook, the ethnologist of the Peary North Greenland expedition, found that menstruation only began after the age of nineteen years, and that it was usually suppressed during the winter months when there is no sun, only about one in ten women continuing to menstruate during this period. It was stated by Velpeau that Lapland and Greenland women usually only menstruate every three months, or even two or three times during the year. On the Faroe Islands, it is said, that menstruation is frequently absent. Among the Samoyeds, Mantegazza mentions that menstruation is so slight that some travellers have denied its existence. Azara noted that, among the Guaranas of Paraguay, menstruation was not only slight in amount, but the periods were separated by long intervals. Among the Indians in North America, again, menstruation appears to be scanty. Thus Holder, speaking of his experience with the Crow Indians of Montana, says: "I am quite sure full blood Indians in this latitude do not menstruate so freely as white women, not usually exceeding three days."[2] Among the naked women of Tierra del Fuego it is said that there is

[1] *Vide* Ellis, "Psychology of Sex," vol. ii. pp. 57, 58.
[2] *American Journal of Obstetrics*, No. 6, 1892.

often no physical sign of the menses for six months at a time. These observations are noteworthy, though they clearly indicate on the whole that primitiveness in race is a very powerless factor without a cold climate. On the other hand, there is some reason to suppose that in Europe there is a latent tendency in some women for the menstrual cycle to split up further into two cycles, by the appearance of a latent minor climax in the middle of the monthly interval. I allude . . . to Mittelschmerz or intermenstrual pain." Physiologists appear to be coming to the opinion that the higher the evolution of the animal the more sanguineous becomes the nature of the menstrual flow and the greater becomes the frequency of the same, *i.e.* the liability to intermenstrual flux.

Thus the phenomena of menstruation in monkeys, though frequently characterised by a free sanguineous flow, emphasises the general condition more, and the male participates in minor degree. The same remark applies to the domesticated dog and cat.

Facts of this kind have not yet been correlated to the phenomenon of heredity; and yet they seem to me pertinent, implying "persistence of force" as influencing germplasm, though not necessarily through the medium of "alterations of the nutritive fluids," the result of acquired variations. Such alterations cannot be the only means of impressing germplasm. The difficulty of biologists to-day is to know how many ways the germplasm can be influenced, and meanwhile, in the absence of such full knowledge, to form working theories.

Dr Archdall Reid denies "the very existence of the elements which cause the germ cells to proliferate into organisms with the acquired variations of the parent," and "therefore neither acquired variations nor an acquired power of varying can be transmitted."[1] And he further defines his position thus, viz.: "In the last analysis all inborn variations in any organism must be due to *acquired variations in the germ cell from which it arose.* . . . A force acting on an organism may produce changes in its germ cells, and consequently in the descending organisms; but, it is denied that the changes produced in the germ cells are usually such that in consequence of them they tend to grow into organisms in which appear

[1] *Vide* "The Present Evolution of Man," p. 124. Chapman & Hall, Ltd., 1896.

changes similar to the changes produced by the force in the parent organism."[1]

Now, apart from the apparent contradictoriness of the foregoing propositions (which may be more apparent than real), it is to be admitted, perhaps, that the vast multiplicity of conditions determining the ultimate conjugation of particular gametes, and the evolution of the zygote subsequently, do effectively ensure such a result, in the majority of cases. *Dissimilar* changes may ensue in the immediate progeny and the *similar* in the remote. Our knowledge is not adequate to the formulation at present of any dogmatic conceptions. But, if the primarily acquired modifications of the germ were directly transmissible as such, so surely *may* those latterly. Only, those, becoming achieved with greater difficulty, and the rôle of N. S. being now restricted to fewer and more subtle characters, *e.g.* the mental, natural transmission of acquired, characters may appear exceptional and even abnormal. That such transmission, however, does occur directly, indirectly, and dissimilarly seems to be the fact. Naturally, necessarily, trophic alterations of somatic content must now precede acquirement by the germplasm and especially such alterations in the nerve, and other organic apparatus, concerned in the elaboration of the germplasm, or, otherwise, subserving its maintenance in normal vigour of potentiality. This, then, involves, *for the most part*, a pathological etiology of germplasm modification; and a transmission, for the most part, of pathological modification in the soma of the zygote. I am not aware, however, of any fact or facts which necessitate such somatic modification of offspring *being identical with that of the parent.* Would it not be—is it not—chimerical to expect that such should *invariably* be the case? Especially in view of the variety and multiplicity of conditions; say, the variety and multiplicity of the maternal conditions alone, not to speak of the paternal, not to speak of the environmental, and specific, possibly disparate in both.

Regarding the first, the most immediately pertinent, no data are recorded to exhibit what effect upon progeny such frequent ailments as endometritis, oöphoritis, leucorrhœa, gonorrhœa, the various forms of anæmia and chlorosis, congenital syphilis, chorea, and other more purely neurological affections,

[1] *Loc. cit.* p. 131.

rickets and joint affections, and chronic disease of the organs of vegetative life, not to speak of brain and purely emotional ailments, have upon the potentialities of the germplasm. We obtain a clue, albeit, to the operation of N. S. in the fact that notoriously diseased females sometimes produce strong and normal infants and *vice versâ*. The germplasm may be vitiated, but it doesn't follow that *all* the ova will be; and the unvitiated will certainly have at least as good a chance of uniting with a male gamete as the vitiated. Of course it is assumed for the purpose of the argument, that all the pathological states alluded to were acquired (even the congenital, for clearly these may not have been present in either sperm or germ previous to conjugation), all inborn states, *i.e.* belonging to sperm or germ prior to conjugation, *must* be hereditary. The question is—May not the others become hereditary likewise under the operation of N. S. It seems to me that the answer must be in the affirmative. In illustration I quote the case given by Dr J. W. Ballantyne as having been observed by the late Dr George Elder and himself,[1] one of tylosis palmæ et plantæ acquired by a mother, and transmitted to daughter, granddaughter, and great-grand-daughter. It appeared early in the ontogeny, and came to be looked for at birth. He says also (*loc. cit.*), and I think the fact must be familiar to all who have been in practice, "The same thing has been noticed in anomalies of the fingers and toes, and especially in polydactyly, congenital cataract, in retinitis pigmentosa, in harelip, in cleft palate, in fistulæ of the lower lip, in nævi materni, in microphthalmus, in aural fistulæ, and in a very large number of other anomalies and congenital diseases."

Of dissimilar heredity of modifications may be cited an instance, also given by Ballantyne (*loc. cit.*), of a woman with malformed thumbs, the daughter of a woman similarly deformed, who gave birth to infants with anencephaly, hydrocephaly, and absence of radius and thumbs. This is a most important instance, indicating very extensive depravation of maternal germplasm capable of transmitting similar and dissimilar acquirements hereditarily.

Another case may be cited from the *British Medical Journal*, 1st December 1900, occurring in the practice of Dr F.

[1] Vide *British Medical Journal*, p. 1460, June 16th, 1900.

M. Pope and Astley V. Clarke of Leicester. The father was the subject of acromegaly, and the daughter of infantile myxœdema. From my own practice the following can be cited:—

A. B., carter, the subject of rickets, begat daughter, hunch-back, and later subject of anterior poliomyelitis of which she died. Other children strumous. Mother healthy.

A. G., publican, addicted to excessive alcoholism. Begat daughter, subject of anterior poliomyelitis, and the consequent deformities due to paralysis. Son subject to excessive and chronic alcoholism.

B. L., wife with syphilitic stigmata, begat child (male) subject of anterior poliomyelitis at æt. 1½ years and subsequent deformity. He himself *acquired* syphilis later, and, *subsequent to prolonged treatment*, a daughter was born congenitally syphilitic. Notwithstanding most prolonged and careful treatment, this girl continued to exhibit stigmata in teeth, hair, hands, and skin. The other members of the family (four), *all older*, exhibit recondite phenomena of the same disease, to wit, the Raynaud phenomena, asphyxia of the extremities, etc., etc., dysmenorrhœa, abnormal flushings, etc., affections of hair and nails, and derma generally.

Mrs H., syphilitic, begat anencephalic infant. In other pregnancies had hydramnion, and the whole family (eight) exhibited one or other stigma of syphilis.

Jonathan Hutchison in his *Archives* for June 1900, cites a case from his own practice illustrating the ability of a mother, persistent through many years, to transmit syphilis. According to the doctrine of telegony the ova stored up in the stroma of the ovary receive some impression from a first impregnation, the effects of which may become manifest in results of sequent or subsequent pregnancies. The law implies not only that ova are remarkably retentive of impressions, but remarkably discriminative, possibly to first impressions, and perhaps good storage places for toxins.

Though the law and the fact are disputed and discredited by Professor Cossar Ewart[1] and Dr Archdall Reid[2] they have been accepted by veterinarians generally through all time,

[1] *Vide* "Penycuik Experiments." A. & C. Black, Edinburgh.

[2] *Vide* "The Present Evolution of Man." Chapman & Hall, London.

and by breeders are regarded as dominating their art and science. Thus a bitch, crossed by a dog, *not* of her own breed, is regarded as entirely spoilt. She obtains what is called "a strain of the dog's blood," and never loses it. She transmits this acquired strain to all progeny the result of subsequent impregnations to a dog of her own proper breed. From some of the later of these progeny may issue what, to the ordinary eye, may appear to be a pure pup. This, however, if lined by a pure-bred dog (or *vice versâ*) will be found to yield a litter, *one or more of which will possess all the features of the breed from which the grand-parent acquired the foreign strain.* This result has empirically happened so frequently that it has become the common knowledge of the vet. and the breeder. Similarly with regard to sheep. *E.g.* let a white-faced ewe be crossed by a Shropshire ram. The offspring will bear evidence of its mixed origin. Let the same ewe be then tupped by a ram of its own class. The offspring will, generally, have a greater resemblance to a Shrop. than to its own male parent, and so on.

Regarding horses the facts are similar, and that the acquired strain persists during generations is illustrated by the fact of "casting back to a cross" which happens when an entire horse and mare of the same breed and of good pedigree, as a result of union, produce a foal not of their own class, showing clearly that, generations back, a female ancestor was crossed by a horse *not* of her own breed. Now it appears to me that we have in these instances cases where the parental soma has not been materially altered, no apparent somatic acquirement has been effected, but a recondite acquirement has been effected, in such a special way, as to lead to such modification of *some germ cells* as will inevitably reproduce, in immediate or remote offspring, the identical acquirement. But Dr Reid says there is no acquirement! The mare, *e.g.* crossed by the Zebra stallion doesn't acquire the Zebra stripes, and, therefore, cannot transmit them! It appears to me, however, that this begs the question at issue. It appears to me that the mare does acquire, *so far as her germplasm is concerned, the Zebra stripes in potential, the only way possible*, and that she transmits them likewise in the only way possible, viz. potentially.

SOME OBSERVATIONS UPON DIETETICS IN PULMONARY TUBERCULOSIS[1]

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DR KINGSTON FOWLER, in his address yesterday, referred to the work on Dietetics and Metabolism which I and my colleague Mr Chapman are now engaged upon, and although I had not intended to make any contribution on this subject to the Congress, at the request of the secretary of this section I will endeavour to briefly tell you what we have done, and what we are doing.

Over two years ago, when in charge of the sanatorium wards of the Sheffield Infirmary, two incidents led us to believe that we were overfeeding our patients, viz.—

(1) That some patients, who were taking very large diets, and not gaining weight, were excreting very large amounts of urea (over 900 grains daily). Such patients were mostly up to their normal weight, and with quiescent diseases.

(2) Owing to complaints of the expense of my sanatorium wards, made by the Weekly Board, I reduced the diets by nearly a third, and instead of disasters following as we had feared, the results as regards gain in weight and general improvement continued to be excellent. On the strength of these two facts, we fitted up the necessary apparatus, and worked out the metabolism of one of the patients on a weighed diet of considerable dimensions. The results of this work were not published, but strengthened us in our opinion that the very large diets we were using were probably unnecessary, and perhaps doing harm.

Last autumn, thanks to the courtesy of Dr Fowler, who placed a ward in Brompton Hospital at our disposal, we, with the assistance of Dr Goodbody of University College, were able to carry out a fuller research upon the effect of ordinary and forced feeding upon metabolism in tuberculous patients. The experimental work was carried out in Prof. Harley's laboratory, so we had the benefit of his valuable advice all through the period of research.

[1] Remarks made at the Discussion on Sanatoria at the Tuberculosis Congress.

To epitomise the results very briefly we found that—

(1) The patients, when not closely supervised, did not get a sufficient amount of food, though plenty was given; so that patients on the hospital routine improved quicker when under closer observation.

(2) The patients in the special sanatorium wards did excellently in every respect, judged both from a clinical and experimental standpoint.

The diet of these wards is of practical interest, viz., three meals daily, made up of—

Meat . .	7 ounces
Bacon . .	2 „
Egg . .	1
Milk . .	3 pints
Butter . .	3 ounces
Bread . .	7 „
Sugar . .	1 „
Pudding . .	5 „
Vegetables . .	6 „

(3) Patients on this diet, when given a considerably larger quantity of food, such as 6 or 7 pints of milk, 12 oz. or more of meat, in a few cases with several ounces of somatose or lactose in addition, did not give such satisfactory results. Weight was certainly gained at a greater rate, but in several cases this gain was associated with deterioration of general health, and laboratory results indicating deranged metabolism.

With regard to pushing proteid, we found that after a certain point much of the increased intake was wasted, in several instances as much as 50 per cent. of an increase being immediately excreted. Associated with this waste we found also a marked rise in the ratio of aromatic sulphates excreted, indicating increased intestinal putrefaction; a steady fall in the percentage of nitrogen excreted as urea, indicating less thorough nitrogenous elimination; and a steady fall in the percentage absorption of nitrogen.

Coincidently with these experimental results, indicating deranged metabolism, the patient's condition, from a clinical standpoint, became less satisfactory. Anorexia and dyspeptic symptoms appeared, and in one case vomiting occurred; symptoms all previously absent.

In contrast to the bad effects produced by giving a great excess of proteid, the inclusion of very large quantities of fat in the diet led to practically no diminution in the percentage absorption of fat. This fact supports clinical experience as to the dietetic value of fat in this disease.

For purposes of comparison we then made similar experiments upon ourselves, and with somewhat similar results, viz., rapid gain in weight, at the expense of general health. The weight gained was subsequently rapidly lost on returning to ordinary feeding. The similarity of the clinical and laboratory results given by our own cases, and by some highly fed tuberculous patients, are, I think, very suggestive. At the present time we are at Banchory Sanatorium applying the results of this work to actual practice. Having calculated out a diet for a new patient as probably suitable, the prescribed meals are weighed out, the leavings, when necessary, also being weighed, and the metabolism of these cases is periodically worked out in the laboratory. Careful clinical records as to progress of pulmonary lesions, etc., are also kept. From the results thus obtained we hope soon to be able to speak more definitely upon this subject, but at the present time we believe that the very large diets often given in sanatoria are to a large extent unnecessary, and often harmful.

As a commentary on the practical value of studying dietetics in this disease, I will conclude by giving a brief record of two cases at present under our care. One case is an example of dyspepsia and vomiting associated with underfeeding, and the other an example of similar symptoms associated with overfeeding.

1. *Dyspepsia and Vomiting associated with Underfeeding.*

Cases of this type are by no means uncommon among sanatorium admissions. They usually have active, often even extensive disease, with marked constitutional disturbance. Appetite and digestion are usually very poor, and treatment has been largely devoted to these symptoms. Such treatment too often consists of gastric tonics and sedatives, with light dieting, the diet often including soups and other meat extracts of but small nutritive value in place of more useful every-day food-stuffs.

1. *Example.*—A. B., with extensive active disease in both lungs of some six months' duration, very emaciated, and with pronounced dyspeptic symptoms. Vomiting nearly every day. The diet for over two months has been approximately equivalent to—proteid, 70 grammes; fat, 160 grammes; and carbohydrate, 160 grammes made up as follows:—

Breakfast.—Porridge, with cream, 5 oz.; milk, ¾ pint.

At 11 A.M.—Milk, ½ pint, with egg, 1.

At 1 P.M.—Soup, 1 pint.

At 3 P.M.—Milk, 5 oz., cream, 5 oz., biscuits, 2.

At 7 P.M.—Benger's Food, 1 pint.

She also took brandy, ℥1 every three hours; maltine, ℥2; Fellowes' Syrup, ℥1; and creosote capsules, min. 4, thrice daily; and in addition, tonics and cough mixtures when she could manage to take them.

The results of this treatment, which was obviously directed to the amelioration of one set of symptoms rather than to the disease as a whole, were very unsatisfactory, the gastric symptoms, amongst others, becoming worse.

On admission the diet was increased 80 per cent. in proteid, and 40 per cent. in carbohydrate, while the fat remained the same. Upon this diet the patient rapidly improved in every respect, the persistent vomiting being one of the first symptoms to disappear.

2. *The Dyspepsia and Vomiting associated with Overfeeding.*

This type of case is not often seen in general practice, but appears to be fairly common in sanatoria. Such patients, in my experience, are usually up to, or above, their highest known weights, and with disease to a large extent arrested. They usually give a history of having done excellently on the high feeding for some months, but subsequently to have lost appetite and developed dyspepsia. The worst cases of this type suffer from great anorexia and nausea, usually intensified by the sight of food. They often vomit during meals, and not unfrequently bring up half a pint or so of greenish fluid before breakfast. This fluid contains no food.

The following are notes of such a case:—C. D., with fairly extensive disease largely arrested, apyrexial, and 4 lbs. above

his highest known weight, having gained over a stone as the result of thirteen weeks sanatorium treatment. During the last six weeks, hitherto excellent appetite and digestion have given place to marked anorexia, dyspepsia, and general ill-health; and for the last month a ¼ to ½ a pint of the greenish fluid already referred to has been vomited daily before breakfast. The diet for the past thirteen weeks has been approximately—proteid, 200 grammes; fat, 210 grammes; carbohydrates, 300 grammes; made up as follows:—

At 7 A.M.—Milk, ½ pint.

Breakfast.—Soup plate of porridge, with 1 oz. of cream; two courses of meat (about 4½ oz); bread, 2 oz.; butter, 1 oz.; milk, ½ pint.

At 11.—Milk, ½ pint.

Dinner.—Soup; meat, 4½ oz.; boiled suet pudding, 5 oz.; vegetables, 5 oz.; milk, 1 pint; bread, 3 oz.; butter, 1 oz.

At 4 P.M.—A cup of tea, with bread and butter, and milk, ½ pint.

Supper.—Two courses of meat (about 4½ oz.); vegetables and milk pudding, a large helping of about 5 oz.; bread, 3 oz.; butter, 1 oz.; milk, 1 pint.

On admission, this patient's diet was reduced by some 30 per cent. proteid, and 40 per cent. fat; the carbohydrate was unaltered. Walking exercise was considerably increased. Upon this treatment the dyspepsia and vomiting completely disappeared in ten days, appetite returned, and what is more interesting, the patient gained a further 2 lbs. in weight during the first fortnight. Since then he has remained stationary at about 6 lbs. above his highest known weight.

These are two extreme cases. A diet between the two just quoted would probably have given good results in either of the patients.

PITFALLS IN ANÆSTHESIA

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GIVEN a healthy normally constituted patient, a chloroformist of some slight experience, and, short of absolute poisoning, in the majority of operations requiring general anæsthesia all will

go well and the giver of the anæsthetic will experience no particular anxiety. A dozen or twenty of such cases will make the inexperienced student or practitioner think that after all far too much fuss is made about the dangers of anæsthesia. Let him go a little further and some day his opinions in this respect will undergo a marked change. There are a number of operations, many of them peculiar to hospital or special surgical practice, during which it behoves the anæsthetist to tread warily, and much care and judgment will be necessary to prevent the occurrence of symptoms on the part of the patient which will give the operator and all concerned great anxiety, and, alas! in some instances do away entirely with any necessity for further operative measures.

Few operations will cause the chloroformist more anxiety or concern than those directed to the cure or removal of some lesion of the brain or spinal cord.

It is particularly during operations on the posterior portion of the encephalon and on the upper portion of the cord that danger is apt to arise. The condition requiring relief may be cerebellar abscess or tumour—fractured base of skull—a new growth in cord or meninges—or a fracture dislocation of spinal vertebræ. The nearer the lesion, and consequently the field of operations, to the respiratory centre, so the more will the patient's existence be in jeopardy. But apart altogether from the vital nature of the parts which are being manipulated, the question of posture of the patient has a very important bearing. The *prone* position is unquestionably a great difficulty as regards the anæsthetic. Chloroform must be used, for ether is too stimulating, and if salivation occur it will be an additional danger. The circulation will be depressed by the ordinary physiological action of the chloroform, and on the top of this we handicap the patient's respiratory muscles by loading them to a great extent by his body weight. When we have the chest of an athlete or muscular artisan to deal with, under ordinary circumstances all may go well, but when the patient is a woman—probably debilitated by illness—or a feeble, sickly child, matters are different.

In all cases of this kind anæsthesia should be as brief as possible, and rapidity of operation is most desirable. The chances of immediate survival are in inverse ratio to the

duration of the operation, and I am disposed to think that in all cases of this kind, failure of respiration is merely a question of time. In some cases of new growth in the cord, the respiratory centre will be interfered with even before the operation commences, and here, of course, the risk is considerably greater. The question naturally arises, how are these cases best dealt with as regards the anæsthetic? They are usually "got under"; and they are either unconscious or gravely ill—too ill to worry about trifles. Anæsthesia should be induced with the patient supine. Whether morphia is to be used or not, the surgeon had best decide looking at it from the point of his own convenience. If morphia be employed the patient will require less chloroform, but he will require very little under any circumstances, and the least possible amount, subject to the patient's being kept quiet, should undoubtedly be given At no time need the narcosis exceed the second degree of Snow.[1] It will do no harm to administer $\frac{1}{20}$ grain strychnine hypodermically, combined, perhaps, with $\frac{1}{100}$ grain digitalin prior to commencing the operation, and the strychnine can be repeated in thirty minutes. Oxygen should be at hand, and may be given from time to time, but anyone familiar with these operations will realise the difficulty of the anæsthetist in manipulating the necessary apparatus. A cylinder of oxygen may be put in charge of a nurse, however, and with an ordinary hand key she may be directed from time to time to turn on the gas, which is played over the patient's mouth or nose by means of a rubber tube with a vulcanite or gum elastic termination.

The danger in these operations is, not primary cardiac failure; the respiration usually ceases first, and secondary cardiac failure results. The cessation of respiration is, in many cases, due to increased pressure in the fourth ventricle, due to excess of cerebro-spinal fluid, and will recommence when some fluid has been withdrawn; but I have also seen the breathing cease immediately after tapping. The patient is usually cyanosed. His only chance is artificial respiration, instantly performed; but then there is a yawning wound at the back of the neck or head, and the surgeon not unnaturally prefers the patient should succumb at once and painlessly from asphyxia, rather than a few days or weeks later from sepsis

[1] Dr Dudley Buxton.

and its dreadful results. Things having reached this stage, the position the anæsthetist takes up can only be one of "masterly inactivity."

I am indebted to Dr Dudley Buxton for the following description of the position adopted by him in these cases, both at the Queen's Square Hospital for Spinal Disease, etc., and elsewhere :—

"The shoulders are turned sufficiently for the head to be almost face down, and flexed on the trunk. By having the uppermost arm drawn down (in extension) by a nurse, while the uppermost shoulder is supported, the chest can be kept off the table—a point of great importance. The pillow can be so arranged that access can be had to the nose and mouth, while the head is resting firmly. The anæsthetist sits—or stands—facing the patient and opposite the surgeon, while the assistant surgeon stands at the head.

Another condition generally looked upon with misgiving as regards the anæsthetic is empyema, when requiring relief by operation. There are, of course, all degrees of empyema, but if drainage by rib-section (the Estlander Schede operation) is intended, a general anæsthetic must be given. The patients are usually in a markedly asthenic condition—convalescent from a pneumonia which has gone wrong, or phthisical, suffering from hectic fever, anæmic, with a characteristic blue-white appearance and cold extremities, and deriving their oxygenation from one lung. Where possible, as much fluid as can be obtained should be drawn off prior to the induction of general anæsthesia.

Here again rapidity of operating is great gain ; chloroform is the best anæsthetic, but must on no account be pushed. For the primary incision it is quite sufficient to keep the patient in the second stage of anæsthesia, and after that in the first stage—indeed, *analgesia* without true anæsthesia will answer the purpose fully. There is a general consensus of opinion in favour of chloroform. Mr Rickman J. Godlee, whose experience of thoracic surgery is very large, is highly in favour of it[1]—given cautiously. Ether is apt to cause considerable distress and coughing,[2] and so also is the A.C.E.

[1] "Diseases of Lungs," Kingston Fowler and R. J. Godlee, p. 114 (1898).
[2] See Jackson's "Operative Surgery," p. 114.

mixture. It is highly important to maintain a cough reflex throughout, as, if the empyema is in communication with a bronchus, and the patient is deeply narcotised, asphyxia will result. Any cyanosis must be always looked upon as an indication to lessen the degree of anæsthesia. If trouble arise and artificial respiration is indicated, some caution is necessary not to carry it out too vigorously, as pus may be then pumped up into the air passages and thus make a bad matter worse.

The position requisite for the surgeon's convenience in this operation adds very greatly to the risk. The choice lies in most cases between an absolutely *prone* position, or laying the patient partially or completely on his sound side. Probably laying the patient partially on sound side and partially supine, and supporting him by means of assistants is safest. In the more chronic cases, fortunately, the lung and muscles of respiration of the sound side will have so far become hypertrophied to enable them to meet the demand for additional work.

Any extensive tumour or swelling in the immediate vicinity of the trachea is calculated to cause trouble when anæsthesia is induced. Under this head one naturally thinks first of goitre, which is responsible for many fatalities and anxious cases; but "Angina Ludovici,"[1] or submaxillary cellulitis, or, indeed, extensive and large tuberculous glands may give rise to as much difficulty as any goitre.

None of the cases under this heading, as a general rule, take ether well. Chloroform or A.C.E. given very carefully and with plenty of air—only to a light degree of anæsthesia are indicated. The dyspnœa, often present prior to the exhibition of any anæsthetic, is frequently aggravated under it, and necessity for immediate tracheotomy may arise.

Mr James Berry in *British Medical Journal*, July 7th, 1900, published a detailed account of one hundred operations for goitre—with one death from the anæsthetic. He considers that if there is any dyspnœa a general anæsthetic should be avoided if possible and local anæsthesia used. The advantages are—(1) The patient can herself give warning when too much traction is being exercised; (2) The patient is spared the

[1] For very striking case of this nature reported by Mr Marmaduke Shield, see Hewitt's "Anæsthetics," p. 393.

retching and vomiting afterwards due to the anæsthetic. Professor Kocher removes the most extensive goitres with local anæsthesia alone. A solution of one per cent. cocaine in sterilized water is sufficiently strong, and a large tumour may be quite painlessly removed with the use of ¾ gr. only—an amount which is too small to cause any unpleasant symptoms in the very large majority of patients.

Extensive tubercular glands in the neck may give both operator and anæsthetist as much anxiety as any goitre. In this connection it is well to bear in mind that a dozen Spencer Wells forceps lying across the trachea may cause much respiratory difficulty. This seems an unlikely cause of trouble, but with a careless and unthinking assistant it is by no means rare.

Anæsthetics in Morbus Cordis.—While there is always additional risk in anæsthetising patients suffering from some cardiac lesion, yet it will comfort the anxious administrator to bear in mind that in the large majority of cases when an autopsy is held after a death from chloroform the heart is found to be perfectly healthy. However, it is necessary to exercise great care and judgment in dealing with these cases. The risk of primary cardiac failure is naturally greater, struggling is extremely dangerous, and cardiac syncope during early stages of anæsthesia more likely to occur. It is highly desirable to induce the anæsthesia as quietly as possible, and to minimise oxygen deprivation, and when anæsthesia has been induced to keep the patient in an even condition of perfect anæsthesia. In mitral disease,[1] chloroform or A.C.E. will be found to give best results. There is always a momentary condition of partial anoxæmia on the production of anæsthesia by gas and ether, and if the heart is embarrassed too great a strain is put upon it. If ether is used it should be used alone without nitrous oxide or along with oxygen, and the additional time necessary in getting the patient under will not be spent in vain. If struggling occur the greatest caution is needed. The anæsthetic should at once be removed, passive resistance to the patient's movements only exercised and every means of soothing and reassuring him employed.

The above is specially applicable to aortic disease; there is very great danger of syncope in this condition both in the early

[1] Vide *Lancet*, 20th September 1884.

stage of anæsthesia and when the patient is coming out—and commencing to retch and vomit. The blood pressure will fall alarmingly, and the greatest care must be taken to keep the patient completely in the supine position. In marked atheroma and in aneurysm, ether is contra-indicated, and A.C.E. or chloroform should be used in preference.

In fatty degeneration of the myocardium, in cardiac myasthenia and in "strained heart" of athletes there is considerable risk in anæsthetising if asphyxia is allowed to occur to any degree. Such patients bear nitrous oxide very badly on this account. A dental surgeon in large practice told me recently that the only patients he had any trouble with while administering nitrous oxide were a ballet dancer and a half-back in a football team—both likely subjects for strained heart. Considering the number of cases of this sort to whom nitrous oxide is administered — without dentist or patient being cognisant of the condition — it is wonderful how very exceptionally any untoward results are seen. But there is no question ; if any of these conditions are known to exist, oxygen should be combined with the nitrous oxide for dental work, and the asphyxial factor of the anæsthesia carefully restricted.

Few patients will cause the anæsthetist more anxiety than a fat old lady from sixty to seventy with chronic "winter cough" —perhaps some basal congestion and mitral regurgitation with indifferent compensation. She will probably become considerably cyanosed whether you give her ether from a Clover's inhaler or chloroform. A.C.E. on a Hyderabad cone, or Rendal's mask, or simply C. and E., equal parts, preceded by an ounce of good brandy by the mouth, will lead to best results. A preliminary course of digitalis if possible will also be of assistance.

In dealing with all cardiac cases the guiding principle must be, "Maintain perfect anæsthesia and reduce the asphyxial factor to a minimum."

In acute and chronic intestinal obstruction, a general anæsthetic is fraught with danger. The patient is probably collapsed, with a rapid thready pulse, pinched features, distended abdomen, clammy extremities, and has been vomiting and straining a great deal, perhaps stercoraceous vomiting has set in. If a general anæsthetic is employed, ether will be

safest; but prior to its application the stomach should undoubtedly be emptied completely[1] by a siphon, and washed out with some warm alkaline fluid. Otherwise there is great danger from asphyxia, due to uncontrollable vomiting being set up during the operation.

In many cases, however, where a simple enterostomy is intended, local anæsthesia[2] will be found quite sufficient; or, indeed, if the patient is dazed and delirious, as is often the case, a colostomy may be done without giving rise to any additional expression of pain or discomfort. In many instances, also, it must be borne in mind that the patient has unfortunately been plied with morphia prior to the surgeon's arrival.

The greatest care must be exercised to give abundant air if ether be used, and the patient will be easily kept sufficiently under by using a Clover's inhaler—minus the bag—and indicator turned to 3 or full.

The operation of circumcision in children will require considerable care as regards the anæsthetic. Contrary to a widely-spread belief, very young children do not bear anæsthetics well. Ten per cent.[3] of a large number of collected cases of chloroform fatalities have been found to occur in young children. The region dealt with is an extremely sensitive one, and the most profound anæsthesia will be required to prevent any twitching or movement on the part of the patient. It will be dangerous to produce such a degree of anæsthesia in so young a patient, and it is a good rule to expect to see some slight movement of limbs when the foreskin is removed. Reflex cardiac inhibition, if it occurs at all, is extremely unlikely in a child, in whom the reflexes are really not properly developed, and the danger is pushing the chloroform so far that it will act as protoplasmic poison in so young an organism.

The operations dealt with up to the present have been for the most part of such a nature that an anæsthetic other than ether was desirable. I now come to some opera-

[1] *Vide* Greig Smith's article, *Lancet*, September 25, 1901.

[2] An interesting correspondence on the merits of local anæsthesia under this and allied conditions has been just concluded in the *Lancet*, *vide* June 1st, 8th, 15th, and 22nd.

[3] *Vide* Trans. Anæsthet. Soc., vol. ii. p. 120.

tive procedures, during which trouble may arise with the anæsthetic, not from the gravity of the operation itself, nor from a trying posture for the patient, but chiefly from misuse of the anæsthetic, or the employment of an unsuitable one. Dilating the sphincter ani, for operating on hæmorrhoids, etc.; dilating the os uteri; cutting the spermatic cord in castration; handling the kidney, and probing it for calculi; and, lastly, cutting the external rectus oculi, or optic nerve, in enucleation of the eye—all these have been credited with causing profound shock and collapse, and in many cases death.

Personally, I have never had the slightest anxiety in these cases. I have been frequently told by the surgeon "to look out for squalls" at the critical time, but the only symptom I have observed has been a characteristic crowing inspiration when the sphincter ani has been dilated, due to a strong reflex respiratory effort. If profound ether anæsthesia is present, it will not be noticeable; but its almost constant occurrence led Mr Wilson, of Manchester, to suggest its employment[1] as a restorative measure in cases where the respiration had failed. If ether be employed in all these operations, as it may be, no anxiety will be caused. The *fons et origo mali* is its non-employment, or, in the large majority of cases, the mal-administration of chloroform—*i.e.* using only enough to produce light anæsthesia at the critical moment. The shock caused at this time probably acts as a reflex stimulus to the vagus—the inhibitory nerve of the heart—and so gives rise to cardiac failure; exactly the same condition may and does arise when chloroform is used for dental surgery. Every hospital surgeon is familiar with the condition, and so much so, that in many surgical text-books a warning is given as to the probability of trouble arising in such cases. If perfect chloroform anæsthesia is maintained, the risk is minimised or reduced to nil; but it is almost too much to expect of a student, or a medical practitioner not frequently giving anæsthetics, to maintain a perfectly even degree of anæsthesia throughout an operation. The obvious deduction, therefore, is, "employ ether."

Mr Allingham,[2] whose experience of rectal surgery is very

[1] Trans. Anæsthet. Soc., vol. ii. p. 28.
[2] *Vide* Trans. Anæsthet. Soc., vol. ii. p. 43.

great, advocates the routine employment of ether for rectal operations, and it is used almost exclusively at the two special hospitals for rectal disease in London—viz., Gordon Hospital for Fistula, etc., and St Mark's.

Section of the optic nerve is probably the most frequent cause of collapse. The nerve is a large and highly sensitive one, and in the immediate vicinity of the nerve centres. I remember seeing a patient very nearly die from this cause while chloroform was being given very skilfully and carefully by a qualified man of experience; and a well-known London surgeon in ophthalmic practice lost sixteen patients from the same cause (*Brit. Med. Jour.*, Aug. 1875).

From the foregoing remarks it may be judged that there is as much room and necessity for judgment in the choice and exhibition of an anæsthetic as in the employment of any treatment—medicinal, dietetic, or operative. It is incumbent on the surgeon, and is becoming more and more so, to give grave consideration to the question of anæsthesia and the dangers connected with it. It is amazing that in a recent edition of a well-known and popular student's handbook of gynæcology the following "aphorism" is allowed to occur: "Every patient on whom an operation is to be performed may have chloroform—if the operation is indicated, so is chloroform"!!

The laity are singularly enlightened in these days, and the standard of general education is high. Their intelligence and acuteness in regard to what was formerly called "milk fever" is notorious, and they will probably not be the last to realise that there are other and safer anæsthetics than chloroform and various ways of using them; and will put a truer interpretation on what is too commonly ascribed to "fatty heart."

Special Article

THE REORGANISATION OF THE ARMY MEDICAL SERVICES

UNDER the above heading *The Times* of September 30th publishes the official "Report of the Committee appointed by the Secretary of State for War to consider the Reorganisation of

the Army Medical Services." The scheme which the committee recommend is fully stated in 66 paragraphs with an appendix relating to pay. It is worthy of consideration as it contains many and far-reaching changes for an honourable service, and if adopted, is sure to be of benefit to army medical officers in the future.

The first 16 paragraphs relate to the constitution and duties of the *Advisory Board* which in future is to supervise all that appertains to the Royal Army Medical Corps. The Board is composed of—

The Director-General A.M.S.—*Chairman.*
The Deputy Director-General A.M.S.—*Vice-Chairman.*
1 Officer R.A.M.C. with special knowledge of Sanitation.
1 Officer R.A.M.C. with special knowledge of Tropical Diseases.
2 Civilian Physicians } appointed by the Crown.
2 Civilian Surgeons }
1 Representative of the War Office, appointed by Secretary of State.
1 Representative of the India Office, appointed by the Secretary of State for India.
And for Nursing service matters, the Matron-in-Chief, Queen Alexandra's Imperial Military Nursing Service.

Each civilian physician and surgeon must be, or have been, on the staff of a "leading civil hospital." He must be not over 55 years of age on first appointment, and must retire at 60 years. He is paid an honorarium of £200 per annum and his "out-of-pocket expenses." The fact that the Board meets fortnightly practically limits the choice of civilians to the London hospitals. The appointment is for three years. The Board is required to deal with all the work of the R.A.M.C., to prepare a scheme for "the expansion of the service to meet the needs of war, or serious epidemics," and give its opinion on plans for new hospitals, barracks, and standing camps; and to appoint a sub-committee, of one military and one civilian member, who shall make an annual surprise inspection of each military hospital, and shall report if its "equipment and the treatment of patients be in accordance with modern medical and surgical requirements." The Board is to supervise the nursing service, the examination of candidates for the R.A.M.C., promotion of officers, etc.

Assuredly even with the lavish payment of "an honorarium of £200 per annum and out-of-pocket expenses" a position on the Board will be no sinecure. Still there can be no question that this is a great advance on the time when all this authority was vested in one mortal man.

Paragraphs 17-20 deal with the duties of the *Director-General.* He is to be appointed by the Secretary of State on the recommendation of the Commander-in-Chief, acting with the advice of the Advisory Board and shall hold office for five years. He shall be responsible for the distribution, promotion, discipline and general organisation of the Army Medical Service, the Militia Medical Staff Corps, the Militia Reserve, and the Volunteer Medical Staff Corps. The promotion of officers and the "due provision of medical aid for the Auxiliary Forces, Militia, Yeomanry and Volunteer services" are to be carried out in concert with the Advisory Board. It seems somewhat invidious that no special mention is made of the Volunteer Medical Officers. Some of these, it is true, come under the heading of Officers of the Volunteer Medical Staff Corps, but the great majority are regimental officers belonging to the regiments with which they serve—an integral part of these regiments—and officers who have no counterpart in the regular army. To make those regimental officers hold the same relative position as army medical officers they would require to be officers of the Volunteer Medical Staff Corps, and they would wear the uniform of that corps and be detached to serve with different regiments. It is more than doubtful whether the majority of volunteer medical officers would submit to such an arrangement. As it is at present they hold an anomalous position and are designated by titles which do not now occur elsewhere in any branches of the service.

Candidates for admission to the R.A.M.C. are not to exceed 28 years of age and are to be properly qualified. Special arrangements may be made for the admission of civilian surgeons over age who have served with troops in the field. If the candidates' qualifications are admissible he is to appear before the Advisory Board and be medically examined before undergoing professional examination. This examination is to consist of Clinical and Practical Medicine and Surgery. Apparently the examination in Anatomy, Physiology, Materia Medica, etc., is to be done away with, which is certainly a good thing and only a tardy recognition of the general improvement in the medical curriculum which has taken place throughout the various medical schools in the country during the past decade or two.

Lieutenant-on-Probation is the first rank of the successful candidate, though indeed it cannot correctly be called a "rank" as it carries with it no "commission." In the first paragraph which deals with his duties a curious phrase occurs. He "shall proceed to Netley (*until other arrangements have been made*) for a two months' course of instruction in hygiene and bacteriology, after which he shall be examined in these subjects." "Until

other arrangements have been made." Do the authorities contemplate doing away with Netley as a military medical school? Or are Lieutenants-on-Probation to be allowed to study hygiene and bacteriology in civilian schools? Having satisfied the examiners in these subjects he is to proceed to Aldershot to undergo a three months' course in—Stretcher and ambulance drill; Interior economy; Military law and hospital management; and to be examined in these subjects thereafter. The sum of the marks gained in the examinations at Netley and Aldershot is to determine the lieutenant-on-probation's position in the Army List.

It seems to us that this is an improvement. Formerly the lieutenant-on-probation spent four months at Netley and six weeks at Aldershot; but granted that he is better professionally than his predecessors, it is right that the school work should be of shorter duration than the new Aldershot course. We trust, however, that as lectures in Military Surgery have long ceased to exist in civilian schools, that this subject will be duly considered in the Netley course. We remember with pleasure and no little profit the admirable Military Surgery lectures of the late Surgeon-General Sir Thomas Longmore, and trust that all succeeding generations of lieutenants-on-probation will have as splendid an opportunity of acquiring a knowledge of this interesting subject.

If a lieutenant-on-probation fail in this examination he shall be put back for six months and shall have only that other chance to qualify.

An excellent proviso occurs in paragraph 27. It is, that if a candidate be successful in the entrance examination whilst holding an appointment in a recognised civil hospital or shall obtain such an appointment immediately on passing the examination he shall be "seconded" for a period not exceeding one year, and though receiving no Government pay during that period he shall be allowed to count this as service towards pension or gratuity. This removes the serious grievance that men entering the service after holding posts as house-surgeons or physicians are placed below men who may be less qualified to act as surgeons or physicians through not having held such appointments.

A *Lieutenant* on completion of his course of instruction, will be attached for duty to a battalion, regiment, or other unit, but while thus attached will also be detailed for duty in a station hospital. There is little difference in this regulation to what has existed in practice previously. Formerly these officers were attached to station hospitals and did duty with the battalion, regiments or units from which each station hospital

drew its sick; in future the lieutenants are to be attached to the units and do duty at the station hospitals to which these units send their sick. The only difference being that when the regiment moves the lieutenant R.A.M.C goes with it, when formerly he remained at the station hospital irrespective of the movement of troops.

After three years' service the lieutenant may adopt one of three courses, viz:—

1. He may retire.
2. He may continue in the service.
3. He may engage for seven years in the Reserve of Officers, receiving £25 per annum whilst so serving.

If after being not less than one and not more than three years in the Reserve of Officers he desires to return to the Active List he may do so with permission of the Secretary of State, and one-third of the time spent in the Reserve will be counted towards promotion, pension, or gratuity. This seems to be a good plan, because many a man who has served in the R.A.M.C. for three years is unlikely to take kindly to general practice and he may desire to return to the flesh pots of the regimental mess from the husks of civil life.

"Should the officer elect to remain in the service, he shall be attached for a period of six months to a recognised hospital, in a centre where he has opportunities of gaining further professional knowledge by attendance at a course or courses of instruction in a civil hospital, or otherwise as may be approved by the Advisory Board" (paragraph 30).

At the end of six months' instruction he shall be examined in Medicine, Surgery, Hygiene and Sanitation, and Bacteriology and Tropical Diseases. He must gain 40 per cent. in this examination, and if he gains 85 per cent. he shall get eighteen months' acceleration of promotion; if 80 per cent. he shall get twelve months' promotion; 70 per cent. six months', and 60 per cent. three months' promotion. If he fail to qualify he shall be put back six months and allowed to try once again. A lieutenant's pay varies from £250 to £323, 10s. per annum.

Captain's rank is obtained on passing the above examination and he shall then have a course of Field Hospital work and Bearer Company drill. He then puts in another six years' service. At the end of this time he may—

1. Retire with a gratuity of £1000.
2. Continue in the Service.

If he continues in the Service he shall between his ninth and twelfth years of service be stationed at such a military hospital as shall enable him to attend a civil hospital for six months, and after that he shall again be examined in Medicine,

Surgery, Hygiene and Sanitation, Bacteriology and Tropical Diseases; Military Law, Administration and Interior Economy, and one of twelve special subjects.

The marks obtained in this examination may again gain him promotion, viz:—85 per cent. eighteen months' promotion; 80 per cent. 12 months' promotion; and so on as in the examination for a lieutenant, and failure to qualify will have the same result.

In order to encourage the study of special subjects, specialists shall be appointed in each Army Corps, and such appointments will carry with them extra pay at the rate of 2s. 6d. a day. Special leave may be obtained for six months for "advanced professional study." A captain's pay varies from £287 to £477, 15s. 2d., exclusive of "specialist pay."

A *Major* gains his rank after twelve years' service. Thus an officer who has gained 85 per cent. in his two previous examinations will become major after nine years' actual service. At the end of three years in this rank he may—

1. Retire on a gratuity of £2500.
2. Continue in the service.

If he continue in the service he shall, before he completes twenty years' service, obtain three months' study leave, and then he shall be examined in a variety of subjects relating to military and medico-military matters. If he fail to qualify (50 per cent.) he shall have a second opportunity six months later, and if he fail again he shall be compulsorily retired on a gratuity of £2500, or shall complete his twenty years' service, and retire on pension.

A major's pay varies from £430 to £713, 15s. 4d., exclusive of "specialist pay."

Qualification in the major's examination shall make him eligible for promotion to *Lieutenant-Colonel.* Apparently the authorities contemplate the possibility of having too many lieutenant-colonels, for they say that after twenty years' service majors are to be selected for promotion to this rank, while those not selected shall be put on unemployed list at major's pay till they complete twenty-five years' service, and if not promoted before then shall retire. This is the same as is done now in the Royal Artillery.

The pay of a lieutenant-colonel varies from £547 to £804, 15s. 4d.

The remaining twenty paragraphs concern the higher ranks, hospitals, etc. They contain many interesting "concessions." Thus we find that medical officers shall be eligible for brevet promotion as in other branches of the army. Promotion to the rank of colonel and surgeon-general shall be by selection—

presumably the Advisory Board are to do the selecting. Junior medical officers shall be gazetted directly to the Household Brigade, and shall not be attached to them from the R.A.M.C. as at present. Medical officers in charge of hospitals shall receive charge pay. This naturally varies, according to the size of the hospital, viz. :—

300 beds	. .	10s. per diem
200 „	. .	7s. 6d. „
100 „	. .	5s. „
50 „	. .	2s. 6d. „

The appointment to the charge of certain selected station hospitals—probably the larger ones—shall be for a period of three years. Officers, other than those attached to units, shall remain two years in the district to which they are appointed. The P.M.O. in each Army Corps shall be the staff officers of the G.O.C. for all medical and sanitary matters. Each Army Corps shall have a fully equipped bearer company and field hospital attached to it. Convalescent homes shall be established in each district, to which soldiers recovering from severe illness may be sent. The returns and forms of accounts used in hospitals are to be simplified. Consulting physicians and surgeons are to be appointed from the acting staff of recognised civil hospitals, to be available when required.

The Advisory Board are to take immediate steps to present a detailed scheme for the establishment of a Military Hospital and Medical Staff College for the training of officers of the R.A.M.C.

We consider that the above scheme is an honest endeavour to set right the many "grievances" which have been lately aired *ad nauseam* in our medical journals and elsewhere. We believe that every point of any importance has been duly considered, and has received favourable attention. The adoption of the scheme will be a great matter for the army. The medical officers will be placed on a footing they have never before occupied, and if the scheme be carried out in the spirit as well as in the letter it is difficult to see what fundamental grievances would continue to exist. Further, on this scheme's adoption, it will become the duty of all Universities, Colleges, and teaching bodies to place before their students and young graduates the advantages the Service will then offer, and so to help the army to officer its medical service with the best men the schools can produce.

"MUNSHI."

Recent Literature

CRITICAL SUMMARIES AND ABSTRACTS

MEDICINE

By J. MACKIE WHYTE, M.A., M.D.,
Physician to Dundee Royal Infirmary

Treatment of Phthisis with Tuberculin.—There are signs that before long the treatment of pulmonary tuberculosis by tuberculin may be considerably less discredited than it has been for several years. Here and there in selected cases some practitioners have continued the use of it, and it seems desirable that further tests under proper precautions should be made and the results published. San.—Rath Dr Goetsch (*Deutsche Med. Woch.*, 20th June 1901) gives his experiences with the desirable details, and they are most encouraging. He holds to three essential principles in carrying out the injections—(1) not to inject any febrile case of tuberculosis; (2) not to increase the dose until the last dose can be borne without reaction; and (3) to insist on rest in bed on the day of the injection and the following day. He prefers to use the original tuberculin, and has never succeeded in making the tubercle bacilli disappear by means of the new (T. R.) tuberculin alone, although in some cases he gave as much as 20 mg. But in these cases the bacilli soon vanished on using the "old" tuberculin. In cases where, to begin with, even a minute dose of the old tuberculin produced too marked reaction, T. R. tuberculin was employed to lead up to what is regarded as the more potent and effectual preparation. On the third day after the patient's reception into hospital, an injection of usually 0·0001 grm. "old" tuberculin is given. If this produces a rise of temperature, 0·00001 is tried in three days or so; if even this causes reaction, T. R. tuberculin (usually 0·001 mg.) is probably well borne. The dose of this is gradually increased to 0·1 mg. Then 0·0001 or even 0·001 of the "old" tuberculin can be used. This is steadily increased up to 1 grm. when the "cure" is finished, bacilli and cough gone, the weight normal and the physical signs as near normal as possible.

The total number of cases treated was 224. Of these 11 were treated in 1891; during the next three years no new patient would offer owing to the scare; since then, however, as a direct result of the successful treatment more and more have come forward until in 1900 as many as 110 were treated in

the hospital. Of the 175 treated to a conclusion, 125 were regarded as cured; the other 50 were improved, treatment having been prematurely stopped in most cases. Of the 224, only 88 showed tubercle bacilli in the sputum; the others reacted promptly to a test injection of tuberculin. Tuberculosis was excluded if there was no reaction to 0·05 tuberculin reached by rapidly increasing doses. The average length of treatment was six months. Cases that were feverish were treated with rest and packings, so as to remove the feverishness before using the injections. A perusal of the four detailed case-histories is much more convincing and instructive than any summary can be. The results of the ten years' work have been published at the request of Koch, who adds a note. In this he says that all physicians of extended experience in regard to the treatment of phthisis with tuberculin who have published their views agree that properly selected cases (uncomplicated, not too advanced, and quite afebrile) are favourably influenced without any exception.

Prophylaxis of Tuberculosis in Childhood.—H. Neumann (*Deutsche Med. Woch.*, 22nd August 1901), in a digest of some recent papers on the above subject, states that in an investigation amongst the school children of Berlin, carried out along with experienced specialists, he found no fewer than 89 per cent. to be scrofulous. Those children are not merely predisposed to tuberculosis; they are actually infected with the tubercle bacillus. The fact that many recover does not militate against the diagnosis; many die sooner or later of scrofulosis. Often the lymphatic glands retain the bacilli, which spring into activity after some acute infectious disease or produce phthisis in young adults. Prophylactic treatment for scrofulosis is identical with that for tuberculosis. The children of parents who have been infected show a predisposition to receive the poison. The general hygiene of the family must be attended to. Cleanliness of the child and his surroundings, good nursing, good diet, open-air life and exercise, proper house accommodation (which the law might see to)—all those are most important points, and in our cities we all know how difficult of attainment! Enough here, our author thinks, without following Heubner's thorough-going and drastic but impracticable proposals. Heubner would deal with tuberculosis in childhood thus: (1) All tuberculous children, especially phthisical, to be put into sanatoria; (2) children who are discharged from hospital after an acute illness to be detained for a time in special homes if their own homes are insanitary, and especially if there is a tuberculous environment; (3) healthy children to be removed

from families where there are tuberculous adults; (4) children of parents who are weakly, perhaps formerly scrofulous, or otherwise degenerate, and (5) scrofulous children who show no obvious tuberculous disease, to be placed in prophylactic institutions. In Utopia itself one could hardly look for a more charming example of philosophic detachment from practical affairs.

Clinical and Therapeutic Investigations in Pulmonary Phthisis, by E. Stadelmann (*Deutsche Med. Woch.*, 20th and 27th June 1901).—This paper gives the result of five separate researches on cases of phthisis:—

1. Bacteria in the blood are practically never present, contrary to the statement of some writers. The only possible exception is in the death-agony. The difficulties of the investigation and the sources of fallacy are pointed out.

2. Diazo-reaction in the urine of phthisical cases, though present in 55 out of 152 patients, has no constant significance. The proposal which has been made that this should be employed as a test for admission to sanatoria is quite inadmissible.

3. The presence or absence of eosinophile cells in the sputum is likewise without significance.

4. Guacamphol is a valuable remedy for the sweats of phthisis. This drug passes unchanged through the stomach and splits up in the intestine into its components, viz., guaiacol and camphoric acid; the latter of these is of course the effective antihidrotic. A dose of 3 grains at 8 P.M. is usually enough, but this may be increased up to 15 grains. No disagreeable by-effects were noticed. The only advantage over camphoric acid appears to be the smaller dose required. The price of guacamphol is sixpence per gramme.

5. Pyramidon has proved in Stadelmann's experience (as in that of others) a useful antipyretic in phthisis. The dose to begin with is 6 or 7 grains per day, best given in two doses. In 40 cases the results were good in 17, fair in 15, and negative in 8. Where profuse sweats occur after pyramidon, a camphorate of pyramidon has special advantages.

SURGERY

THE STERILIZATION OF LIGATURES AND SUTURES

By J. SCOTT RIDDELL, C.M., M.B., M.A.,
Surgeon and Lecturer on Clinical Surgery, Aberdeen Royal Infirmary

Ligatures.—Many different methods of preparing catgut—the absorbable ligature *par excellence*—have been described, but multiplicity of methods is an indication of imperfection in all.

Catgut has been sterilized by immersion in antiseptic solutions, by the use of dry heat and by boiling. The boiling methods from the use of inflammable fluids, or fluids with inflammable vapours require special apparatus and considerable experience. Brunner's well-known xylol method, as also the more recent and widely-practised cumol method of Krönig of Leipzig, as described below, have this objection.

Elsberg (*New York Medical Record*, May 1900) published a method of sterilization which has special advantages, among which may be noted its cheapness, its availability for general use, the non-inflammability and high boiling point of the fluid used, its simplicity, and the fact that all grades of catgut can be used, and that no special apparatus of any kind is required. This method, which we may call the ammonium-sulphate method, has stood the test of time, for the writer in a recent visit to the Eppendorf Hospital in Hamburg, one of the high temples of aseptic surgery, found this catgut in general use, and highly spoken of by Kümmell. Catgut so prepared has the requisites of a good absorbable ligature, viz.: sterility, strength, and softness and pliability. The formalin method which has been a rival in the past unfortunately has not given constant results even in experienced hands, and those who have used formalin catgut extensively even when prepared by well-known chemists, have found that though sometimes excellent in quality, it is at other times very hard and brittle, and not able to stand a firm strain, while it is always less absorbable than other ligatures. Elsberg's method requires only to be known to be widely accepted, and the imprimatur of Kümmell speaks highly in its favour.

1. The steps of the preparation of Ammonium-Sulphate Catgut are as follows:—

(1) Catgut, freed from fat, as described below, is tightly wound in single layers on suitable spools.

(2) The spools are boiled for from ten to thirty minutes in a hot saturated solution of ammonium sulphate in water, made by adding chemically pure ammonium sulphate to boiling water until no more will dissolve.

(3) Two per cent. carbolic acid solution may be substituted for the water if a quicker sterilization (three to ten minutes) is desired; or 1-1000 chromic acid solution, if the catgut is to be chromicized.

(4) The spools are thoroughly washed by agitation for from one to two minutes in cold, or better, warm sterile water, carbolic acid or bichloride solution of any strength.

(5) The catgut spools are preserved in strong alcohol.

(6) For re-sterilization the catgut spools are boiled for from five to fifteen minutes in any of the solutions, and washed in the same manner as described under 4.

The fatty matter is removed from the catgut by immersing the latter in a mixture of chloroform, one part, and ether two parts, for from twelve to forty-eight hours. It is best to wind the catgut on glass spools, but frames of any convenient size and shape may be employed. The spools are immersed in a hot saturated solution of ammonium sulphate, which boils at 106-108° C., or 220-226° F. The reason for the washing after boiling is to remove the salt, which crystallises upon the strands.

2. Cumol Catgut.—Krönig, successor to the late Professor Sänger, introduced the plan of preparing catgut in cumol purissimum. This method which the writer found to be that of choice, not only in the Gynæcological, but also in the Surgical Klinik in Leipzig, has found wide acceptance elsewhere. A special apparatus is required. The directions for its preparation in Trendelenburg's Klinik are as follows:—Catgut, after being dried for 4 to 5 hours at 80-100° C., is treated with cumol, then taken over into sterile benzin and stored in sterile Petri's glass vessels. Cumol catgut is prepared by Dronke, Cologne, and can be got in sterile pappcarton in six sizes, the price varying from M. 1·30 for No. 0, up to M. 2·50 for No. 6. It should be only slightly moistened before using, and, in my slight experience of it, has proved satisfactory.

3. Pagenstecher's Celluloid Thread (*Philadelphia Medical Journal*, 1900).—This material, though useful in some cases, seems to leave much to be desired, as in the case of buried sutures and ligatures it is apt to set up irritation, and to come to the surface as a foreign body.

4. Braun's Celloidin Thread (Leipzig).—Though the writer cannot speak too highly of this material for skin sutures, for which it has special advantages noted below, it is uncertain as a ligature or buried suture, from its not being absorbable.

Sutures.—Probably the favourite material for skin suture is silk, though catgut, silkworm gut, horse-hair, etc., have all their advantages and their devotees. The writer after an extended use of all these materials came to employ silkworm gut almost invariably, but has now discarded it entirely for celloidin thread, which requires only a trial to become a favourite suture. It has all the advantages of silkworm gut and none of its drawbacks, and can be bought at about one-tenth of the price of the latter. It is best sterilized along with dressings in a steam sterilizer, and can be kept indefinitely in sublimate or mercuric potassium iodide solution (1-1000).

The following are some points worthy of notice in connection with this Celloidinzwirn, which is ordinary cotton thread impregnated with celloidin, as manufactured by Schädel, Reichsstrasse, 14, Leipzig:—

"(*a*) Reason for impregnation. The reason for impregnation of threads used for surgical sutures and ligatures with a substance which coagulates is to make it anhydrous, in so much as hydrous threads which lie in the wound or in stitch punctures fill up with secretion from the wound and bacteria lodge very frequently between the strands, almost invariably in the stitch canal. This can be prevented by the use of anhydrous thread.

"(*b*) The advantage of using ordinary thread. The almost invariable use of silk for surgical sutures is unnecessary, seeing that we can buy various kinds of linen and cotton thread, which are equal in calibre, and quite as strong, as silk of the same size. The advantage of cotton thread is its cheapness, and its power of remaining unchanged during sterilization by heat and chemical disinfectants in contrast to silk.

"(*c*) Impregnation. The strength of the thread is increased distinctly by its impregnation with celloidin, and it is thus superior to silk of like size, however prepared.

"(*d*) Price. It is made in three sizes, and can be bought in hanks 55 metres long for 30 pfennig, or, roughly, at the rate of 100 yards for 6d.

"(*e*) Mode of sterilizing. The celloidin thread should be boiled before using, or, still better, sterilized in a stream of steam. It is preserved in a solution of sublimate (1-1000), where it does not lose any of its strength though kept for any length of time.

"(*f*) Uses. Celloidin thread can be used for skin sutures, buried sutures, and for the ligature of vessels. For the last purpose as a rule the smallest size is employed. It should be noted that for skin sutures the knot must not be tied too tightly, because, unlike silk, cotton thread is inelastic and does not stretch, and the enclosed tissues suffer from too great tension."

I think this thread very deserving of an extended trial, but I cannot recommend it as a ligature. For skin sutures I have used nothing else for some months with excellent results, and I find it preferable to silkworm gut, silk, and catgut. After the thread has been tied in interrupted or continuous suture the wound area is cleansed with sterile water, then dried with a sterile mop, and finally thoroughly dried with ether, after which there is spread over the wound with a glass rod a coating of Schering's celloidin, which forms an excellent dressing.

5. Fibres from the tendon of the External Oblique Muscle as a suture material in hernial operations ("Transactions of the Chicago Surgical Society," *Annals of Surgery*, August 1901).—

Dr M'Arthur, in several recent cases of hernia, used fibres of the external oblique muscle as suture material instead of using any buried sutures, with results as satisfactory as if he had employed catgut or kangaroo-tendon. If one take the internal pillar, three or four threads (which are 4½ to 5 inches long in adults) parallel with the edge of the ring, until one comes to the muscular belly of the external oblique, one gets a strand attached to the spine of the pubes which can be separated up to where it begins to end in the muscle fibre. The same is done with the external pillar of the ring. Fixation of the end of the suture is made by Gumsfelder's plan of splitting the end of the tendon for about an inch before the last stitch is taken, and drawing through one end which is tied to the other.

GYNECOLOGY AND OBSTETRICS

By J. A. C. KYNOCH, M.B., F.R.C.P.Ed.,

Professor of Midwifery and Gynecology, St Andrews University

The Etiology of Pelvic Hæmatocele.—Recent researches have gone to show that many of the supposed sources of hæmorrhage in this condition, described by earlier writers, were founded on insufficient proof. The cause has, in the majority of cases, been traced to one of the various forms of ectopic pregnancy. Fritsch probably goes too far when he states that hæmatocele and the rupture of an ectopic pregnancy are synonymous. *Post-mortem* evidence, by reliable observers, has clearly shown that in rare cases the cause of pelvic hæmatocele is entirely distinct from the presence of pregnancy. Thus the repeated escape of blood in small quantities from the Fallopian tube may, in the course of time, lead to the formation of an hæmatocele. Winckel drew attention to the varicose condition of the veins in the broad ligament as a likely source of the hæmorrhage, especially where the veins are thin-walled and prone to rupture under increased pressure from whatever cause. Virchow has shown that an altered condition of the peritoneum is an etiological factor—a condition described by Bandl as "pelvic peritonitis hæmorrhagica." Doubtless forcible attempts to replace a fixed retroflexed uterus is a not infrequent cause of pelvic hæmatocele.

Gabriel (*Archiv. für Gynæk.*, Band 64, Heft 2) contributes an article on the ovary as a source of the hæmorrhage in retro-uterine hæmatocele. He quotes Jousset's collection of twenty-eight cases, in six of which the ovary was, on *post-mortem* examination, found to be the source of the bleeding. Schröder

has likewise pointed out, in his work on diseases of women, that hyperæmic conditions of the ovary, or rupture of small hæmorrhagic cysts, may, in exceptional cases, give rise to considerable hæmorrhage. He verifies this statement by the publication of three cases, two of which he diagnosed as of ovarian origin. Leopold supports Schröder's assertion by the publication of three cases where hæmorrhage into the stroma of the ovary produced an hæmatocele. The possibility of the rupture of a varicose vein as a source of fatal intra-peritoneal hæmorrhage has been shown by Höring's case of a woman, forty-one years of age, who died suddenly. At the *post-mortem* it was found that the ovary, enlarged to four times its normal size, was replaced by infiltrated blood, and on its surface there was a ruptured varicose vein. Dock has collected a number of *post-mortem* reports in cases of hæmatocele, and of those Gabriel finds the ovary to have been the source of the hæmorrhage in eight cases. In Hulpher's case the hæmorrhage took place from a ruptured Graffien follicle; in Denuovillier's case there was found an opening in the posterior surface of the ovary; in Barne's case the ovary was carcinomatous. He also refers to the cases published by Edgar and Kossman, where a ruptured hæmatoma of the ovary had produced an hæmatocele. Gabriel describes the following case of his own. Patient, twenty-four, complained of severe abdominal pain and bleeding from the vagina. On examination the uterus was found pushed to the front by a swelling felt through the posterior fornix. In the region of the left ovary there was a swelling the size of a hen's egg, and on the right side a somewhat smaller one. The diagnosis was retro-uterine hæmatocele, and the case was at first treated by opium, ice and rest. On account of increase of the size of the hæmatocele it was evacuated through a posterior vaginal incision, when it was found that the left ovary was considerably enlarged, and contained a cavity the size of a cherry, from which fresh blood escaped. The tube on the right side, rupturing on manipulation, necessitated the total extirpation of the uterus. From the microscopic examination of the left ovary Gabriel was able to exclude pregnancy as the cause, and concluded that hæmorrhage from an enlarged follicle was the most probable source of the hæmatocele.

Treatment of Fixed Retroflexion of the Uterus.—In the treatment of uncomplicated cases of retroflexion of the uterus causing symptoms, the replacement of the organ and its retention by a properly fitting pessary generally gives satisfactory results. It is otherwise, however, where the uterus is fixed in its abnormal position when active attempts at reposition during

the acute stage may be attended with considerable danger to the patient. The acute stage having subsided there are three courses open for the relief of this condition,—(1) massage; (2) raising the uterus under an anæsthetic; (3) replacing the fixed organ by operation. Dietel (*Archiv. für Gynæk.*, Band 63, Heft 2) compares those methods. He discusses the question from a study of 92 cases. In four cases where the illness was comparatively recent, rest in bed, hot douches and tampons, carried out for six weeks, gave satisfactory results. In 20 cases this treatment failed on account of the longer duration of the condition. The four weeks' rest, however, even in those cases relieved the pain, thus enabling further treatment to be more satisfactorily carried out. Dietel divides his cases into two groups, the directly and the indirectly fixed. In the former an inflamed pelvic peritoneum is the cause of the fixation, the appendages being normal. Under this heading he reviews thirty-four cases. Of the indirect, he includes those cases where the fundus is fixed by parametritis and tubal and ovarian complications. In thirty-two cases he tried massage, but only in nine cases did he succeed in replacing the uterus and relieving the pain. In eight cases the fixation was only partly removed, although the pain was somewhat relieved. In fifteen cases there was no improvement. Massage, according to Dietel, is best suited for cases where the fixation is caused by parametric adhesions. He employed Schultze's method of replacement under anæsthetic in forty-four cases. In thirty-two of those the uterus was replaced and successfully held in position by means of a pessary.

He points out the danger of perforation of the rectum during the separating of the adhesions, and for this reason he does not care for manipulation through the rectum as recommended by Küstner. In nine cases Dietel was unable to separate adhesions sufficiently to permit of a pessary being worn, so that operation had ultimately to be resorted to. Opinions differ as to the value of massage for gradual reduction, and Schultze's rapid method under narcosis. Schauta, for example, prefers massage for the removal of parametric adhesions.

Where both methods failed to effect replacement Dietel resorted to operation in twenty-five cases, laparotomy being performed in all those cases. In eight cases the tubes and ovaries were removed at the same time. Of twenty-five cases all recovered from the operation, and Dietel is satisfied that there is a permanent cure in twenty-two of those cases. Three cases still complained of pains, and Dietel believes those cases would have been better treated by total extirpation. He discusses the relative merits of vaginal as contrasted with abdominal section

in such cases, and without hesitation he advocates the abdominal route on account of the difficulty in arresting hæmorrhage in the vaginal operation.

A New Source of Puerperal Infection.—That puerperal morbidity still occurs in maternity hospitals is shown by the following figures from various clinics :—Ahlfeld gives 25 per cent., Bumm 21 per cent., Poroschin 29 per cent., Slaviansky 29 per cent. of cases that have a rise of temperature during the puerperium period. As such febrile conditions may occur where no previous examination has been made, and where the most careful disinfection has been carried out, Stroganoff (*Centralblatt für Gynæk.*, No 6, 1901), looked for a new source of infection. He believes that during the past two years he has been able to find a source in faulty methods of bathing the patients on admission to hospital. He regards the baths in general use in hospitals as imperfect, from the fact that dirt removed from the skin, especially the hands and feet, or pus from open wounds, may gain entrance into the vagina, or remain attached to the bath after it is emptied, and affect the next patient who uses it. He has proved that in multiparous patients especially such a source of infection was found in the vagina. Schröder had already pointed out the possibility of infection from this source, and advised that baths should only be given in the early stages of labour on account of the danger of polluted water reaching the uterus in the later stages. If this is so, Stroganoff believes that this may be a cause of danger at any stage, and for this reason he has replaced the ordinary bath by one of the douche type, where the water is poured over the body and afterwards washed off. The results, as far as puerperal morbidity is concerned, have been most satisfactory. Thus, of 759 cases, 85 or 11 per cent. had a slight rise of temperature during the puerperal period. Of those 60 had a one day's rise of temperature, 13 a two days' rise, and 12 a three days' rise of temperature. Stroganoff concludes (1) that the value of ordinary hot baths for pregnant women has not been sufficiently proved ; (2) that the water of such baths is invariably contaminated from the patient's body, and may be a source of subsequent infection ; (3) that by substituting douche baths for the ordinary ones the febrile puerperal cases in his clinic diminished 7·4 per cent.

Sterilization of the Hands and Puerperal Morbidity.—The advantages of wearing sterilized gloves in obstetric clinics is still an unsettled question. Sticher (*Zeitschrift für Geburts. und Gynæk.*, Band 45, Heft 3) describes the results observed in the Breslau Clinic. He gives a series of tables contrasting

the morbidity in cases where sterilized gloves were worn, with those where they were not used, and he finds the difference so very slight that we are scarcely warranted in regarding them as of any great advantage. He holds that all obstetric operations involving any bruising of the soft parts may be associated with a slight rise of temperature in spite of all antiseptic precautions. From this he points out that in many cases the cause of the fever is contained within the patient's body and not necessarily caused by faulty sterilization of hands and instruments. He avoids all preliminary douches unless associated with some pathological condition. Although from Sticher's observations the wearing of gloves does not seem to be of any great advantage, yet they are doubtless of use in the management of septic cases.

OPHTHALMOLOGY

By ANGUS M'GILLIVRAY, C.M., M.D., F.R.S.Ed.,

Lecturer on Ophthalmology, St Andrews University; Surgeon, Dundee Eye Institution; and Ophthalmic Surgeon, Dundee Royal Infirmary

An Operation for the Relief of Stoppage of the Tear Passages; Abscess of the Sac., etc. (Erasmus A. Pond, *Medical Record*, February 2, 1901).—The object of the operation devised by the author is to establish an opening into the nose, and to give in this way free drainage of the lachrymal sac, thus relieving epiphora, and obviating any danger of abscess formation. A silver probe, with one end blunt, and the other with an eyelet large enough to carry a coarse silk string, is threaded and passed through the canal into the nose, where the end is seized with a pair of forceps and drawn out through the nostril. The probe is then unthreaded, and the string left in position with the ends tied together. The string is worn about one week, being drawn through the nose once or twice a day. In tying Pond makes quite a knot which, when pulled through the canal, makes a good large opening. He has used this operation during the past four years with good results. The canaliculus may be slit or not, as deemed advisable. Most of the operations have been done under cocain, but in some he has used ether. There is no pain after the first operation, and the string can be drawn without causing any hurt. In abscess of the sac the string gives good drainage, and saves the necessity of an opening on the cheek.

Removal of the Upper Cervical Sympathetic Ganglion for the Relief of Glaucoma Simplex (D. H. Coover, *Annals of Ophthalmology*, April 1901).—The writer gives the history of a case of glaucoma simplex in which Jonnesco's operation was performed. The immediate results of the operation were encouraging, and were as follows:—1. That tension was lowered to almost normal. 2. Contraction of the pupil and slight reaction. 3. Increase of the visual field and visual acuteness, and the temporal field or nasal side of the retina improved, while the nasal field or temporal side of the retina did not improve. These conditions remained until the attack of supposed "cold in the eye" (three months after), which proved to be nothing more than the return of the former disease, glaucoma; at this time tension was +3, vision reduced to light perception, and the field of vision contracted to where it was at the date of operation, pupil dilated and fixed, no congestion or pain.

The writer concludes from this case, that the operation is of no service where the vision has been reduced to zero, but may be of service in arresting the disease in the earlier stages, and retain vision before atrophic changes have taken place.

Value of Radiant Heat in Eye Diseases (R. W. Doyne, *Trans. Ophthal. Soc. of the United Kingdom*, 1900).—The author utilises for this purpose an ordinary electric incandescent lamp. The drawbacks to the application of hot fomentations have long been recognised, producing, as they sometimes do, a "soppy" condition of the conjunctiva and loss of tone in the skin, with consequent entropion, especially in elderly people; both of which conditions too frequently aggravate the mischief that the fomentations are intended to relieve.

The value of radiant heat, in the shape of Turkish baths, has for some time now been advocated in the treatment of cyclitis, and this is the condition for which the author specially claims relief by the method suggested, for it produces the effect locally of a Turkish bath in a concentrated form.

The great difficulty in relieving patients suffering from chronic cyclitis is too well known, and when it occurs in patients over forty, such cases, in the great majority of instances, are practically hopeless.

Assuming that the trouble lies in the ciliary glands, the difficulty of the situation has prevented local treatment doing much good, while constitutional treatment does not seem to help much. Now, with the application of radiant heat in the manner described, the anterior pole of the eye gets well roasted, and, doubtless, the effect of such roasting of the ciliary glands

would be to set up increased metabolism, and, as we have reason to suppose from analogous conditions, this would tend to set up a healthy reaction, and this the author believes to be the case.

Method of Application.—A sixteen-candle frosted glass lamp is used. The patient sits by its side keeping the eye as close as can be tolerated with the lids closed. In cases of chronic cyclitis or chronic iritis, it is applied at first for five minutes, increasing it to twenty minutes three times a week, or even daily. In cases of acute iritis much more frequently, but not longer than for ten minutes at most. At first brown paper was used between the eye and the lamp, but now, except in cases of acute iritis, when a pad of cotton wool is kept on the eye, it is used without an intermediary.

Of course the whole of the side of the face gets intensely hot, and it may produce a little giddiness, but except for this no inconvenience is found. The patient is directed to sit in the dark or subdued light for twenty minutes after the application, and the value of the treatment has been found increased by gentle massage and cold douching after the heat has been withdrawn.

Light and Seating in the Schools (C. Zimmerman, *Annals of Ophthalmology*, April 1901).—After a brief review of the investigations of others on the subject of the relations of sight and intensity of light, especially in reference to school hygiene, the writer states his views regarding the proper methods of lighting schoolrooms and seating the pupils.

Since insufficient illumination requires too close an approximation of the book to the eyes, thus fostering the development of myopia, Zimmerman mentions as a prime requisite a certain minimum quantity of illumination for school work. To determine this the text-types of H. Cohn, which have a certain tint, and should be read at six metres in sufficient daylight, are recommended. He states that the main source of illumination should be to the left of the pupil, so that the hand casts no shadow on the writing. The glass area of the windows should have at least the proportion of one to five of the floor area of the room, and the windows should reach to the ceiling. A skylight is very desirable if it can be obtained. The width of the schoolroom, that is the distance of the windows from the opposite wall, must not exceed twice the distance between desk and upper window-sill. Since the best light is obtained from the sky, the surrounding buildings should be sufficiently low or distant that the extension of a line drawn from the desk farthest from the window to the edge of the lower window-sill will pass

above the roofs. Windows facing south or east give the most intense light, but if the sun is annoying the writer recommends the use of grey curtains on a pole fastened in the middle of the window, so that the upper or lower half may be darkened separately. Where artificial lighting in schools is necessary, the author recommends a group of incandescent lamps with lightly ground glass, placed in the centre of the ceiling, with a porcelain reflector above them. Several more may be distributed over the remainder of the ceiling and along the cornices.

Another important reform to which attention is called is the correct seating of the pupils. The bodies of the children should be in such a position that the point of gravity, which lies in front of the tenth dorsal vertebra, is in a perpendicular line above a base drawn through both seat bones. To maintain this position with comfort the desk and chair must have certain dimensions and relative positions, conforming to the size of the child, to which requirements the writer draws attention in detail.

Editorial Notes and News

Royal College of Surgeons, Edinburgh.

AT the annual meeting on 16th inst, Dr John Halliday Croom was elected President for the ensuing year. "The Victoria Jubilee Liston Prize" of £100, founded by His Excellency the late Dr Robert Halliday Gunning, of Rio de Janeiro and Edinburgh, for the greatest benefit done to Practical Surgery by any Fellow or Licentiate of the College during the quadrennial period ending 20th June 1901, was awarded to Francis Mitchell Caird, F.R.C.S.Edin., 13 Charlotte Square, Edinburgh.

The Surgical Essay Prize of one hundred guineas offered by the College for an original unpublished Essay on Surgery in any of its branches, on Anatomy, Physiology, Therapeutics or Pathology in their relations to Surgery, was awarded to James Veitch Paterson, F.R.C.S.Edin., 5 Castle Terrace, Edinburgh, the title of whose essay was "The Lymph Flow through the Eyeball."

The following gentlemen, having passed the requisite examinations, were admitted Fellows of the College:—Francis Cubbon Rogers, L.R.C.S.E., Stockport; James Adam Dick, M.D., New South Wales; Clemen Stomerton Clark, M.B., Ch.B., Edinburgh; Edwin Zerubabel Davies, M.B., L.R.C.S.E., Edinburgh; William Henry de Silva, M.B., C.M., Colombo;

John Robert Foster, M.B., C.M., London, S.E.; Andrew Gibson, M.B., Ch.B., Paisley; Sampson John Roger Greville, L.R.C.S.E., Edinburgh; David Heron, L.R.C.S.E., Edinburgh; William Llewelyn Jones, M.D., Merther Tydfil, S. Wales; John Stuart Shepherd Lumsden, M.B., C.M., Indian Medical Service; William John Orr, M.B., C.M., Edinburgh; Ernest John Peill, M.B., Ch.B., Peking; Bertram Crossfield Stevens, M.D., M.R.C.S.Eng., Leeds; and William Young, M.D., Wellington, New Zealand.

The list of examiners appointed will be found in our advertisement pages.

The Death of Mr Pollard.

BY the death of Mr Pollard, C.A., in the end of September, the city of Edinburgh has lost a valuable citizen, and the medical profession one who took a very active and enlightened interest in sanitary matters and in the public health. He was for many years a member of the Town Council, and latterly he occupied the important position of Chairman of the Public Health Committee of the Council. In that position it was always his aim to work harmoniously and cordially with the medical profession, and he oftener than once sought the opinion and advice of the profession on important questions of public health. He took an active interest in the City Hospital and even in the families of some of the patients. It was during his chairmanship that the plans for the New City Hospital were elaborated and determined on. Sanitary matters really became his extra-professional hobby and of them he had a wide knowledge. His knowledge of hospital construction and sanitary administration had been extended by personal visitation of many places both in this country and on the continent, and this knowledge he applied freely to the furtherance of the public health in Edinburgh. He was trusted and esteemed by the medical profession and they feel that his death is a loss to them as well as to the general public.

The Craigentinny Meadows.

WE are glad to see that the Craigentinny Sewage Meadows have been hostilely reported on by Dr Williamson, the Sanitary Inspector for Edinburgh. We remember in past years the stench that on hot summer days made the shore road from Leith to Portobello one to be avoided. However wise it may have been to start this sewage farm, there can hardly be any question that a sewage farm within the

boundaries of a city is doomed; and that is practically its position now. Tenement dwellings adjoin it almost on every side.

Retirement of Dr Yellowlees.

WE regret that Dr Yellowlees, who has filled with so much acceptance the Superintendentship of Gartnavel Asylum for many years, has resigned. We are glad, however, to know that he has taken this step more on account of eye-strain than of any impairment of health or vigour. He is to continue to lecture; and his services as a consultant are still to be at the command of his brethren and of the public.

Edinburgh Medical Missionary Society.

ON the 18th of October the Edinburgh Medical Missionary Society gave a reception "to meet Dr and Mrs Vartan, Nazareth, and Dr and Mrs Mackinnon, Damascus." The chair was occupied by Dr James Ritchie, President of the Society. Dr Vartan and Dr Mackinnon gave a brief indication of the work in which they were engaged; and Dr Clouston spoke with great warmth of the position occupied by Dr Mackinnon amongst the people of the land, as he had seen it himself. Dr Mackinnon requires £600 to build an out-patient department to his hospital; and if any of our readers wish to further a really good and important work their contributions will we doubt not be heartily welcomed by the Society.

Edinburgh Royal Colleges Golf Club.

THE Annual Meeting of the Royal Colleges Golf Club was held at Gullane on the 9th October. Twenty-eight members were present. The weather was delightful, bright, and sunny, with a very slight breeze, but it was not reflected in the scores, several of the players making no return.

Dr Argyll Robertson won his own Scratch Medal for the fourth time, after a tie with Dr J. W. Struthers, who was for the first time competing as a member of the Club. The other results were as follows:—

The President's Prize and the Chiene Cup—
B. Ronaldson, ... 83
First Sweepstakes—J. Shaw MacLaren, . 85
Second „ —R. C. Maclagan, . . 88
Third „ —J. B. Jamieson, . . 89

C. W. Donald, 90; E. Carmichael, 91; P. A. Young, 91; Argyll Robertson, 92; J. W. Struthers, 92; C. J. Lewis, 92; D. Waterston, 94; T. M. Ronaldson, 94; J. Carmichael, 94;

George Mackay, 94; R. H. Blaikie, 96; K. M. Downie, 96; A. Ballantyne, 97; F. D. Boyd, 98; W. Fordyce, 98; Kirk Duncanson, 99.

University of St Andrews.

ON October the 21st the Right Honourable Lord Balfour of Burleigh was installed with becoming ceremony as Chancellor of the University. In the evening a reception was given by the University officials in honour of the event.

Mr Carnegie has been unanimously selected to be the next Lord Rector. He will, we feel sure, take a personal interest in developing the University along useful and practical lines.

Principal Owen Williams on Tuberculosis.

AT the opening of the Winter Session of the New Veterinary College, Edinburgh, on the 2nd of October, Principal Williams, in speaking of tuberculosis, said:—

"But why this excitement? Surely none of us have been under the impression that the *great* cause of tuberculosis in man was or is derived from the milk of diseased cows, from the flesh of diseased oxen? We have all been aware that the cause of the vast number—how vast I can't venture to even guess at—say 999 cases in 1000, has been due to inhalation of dried tubercular sputum of human beings, or of tubercular organisms which had grown in human beings, and that the odd one in 1000 had been due to the tubercular organism derived from the ox tribe. Then why this sigh of relief at Koch's pronouncement? Koch may or may not have destroyed a small kopje, which we really don't know whether or not contained a small outpost of the enemy; but is that of any material question when we remember that the main army is still intact? Don't let us forget this, whether Koch be right or wrong, that there are to-day thousands and thousands of men, women, and children living in this country who are distributing the seeds of the disease in myriads broadcast. It is to these animated Swansonisers that attention must be directed in particular, and not solely to the little kopje containing a tubercular cow or a tubercular pig, if man desires to protect himself from this terrible scourge. But not for one moment do I suggest that the danger from the ox tribe should be ignored, even though Koch has caused a doubt as to whether there even be a danger. It is the prominence given to these *minor* dangers to man that minimises the *great* and *grave* danger that we are incurring daily and incurring blindly that I desire to deprecate. Finally, as regards this question, we, as veterinary surgeons, know that the disease is causing terrible havoc among our herds, and it is

our duty to continue to do all *we* can to abolish the disease from the animals *we* have to attend to, and we can *safely* leave the extirpation of the dire disease from mankind to our medical brethren."

Correction.

OUR attention has been drawn to the omission of Professor Charles Hunter Stewart's name from the list of teachers in Edinburgh. Professor Stewart occupies the chair of Public Health, and his name is to be found in the Programme of Classes for the Summer Session, 1902, at page 347 of the *University Calendar*; but at page 362 of the *Calendar* his name does not appear under "Public Health," whilst the names of the other Professors appear at the top of their respective departments. We regret the omission, but it was evidently due to the omission in the *University Calendar*.

Obituary

James Foulis, M.D., F.R.C.P.Ed., Edinburgh

BY the death of Dr Foulis on October 14th, Edinburgh lost one of its most prominent and successful practitioners, an outstanding personality, and a useful citizen. To many the intimation of his death was a painful surprise, for it was not generally known that he was ill. His last appearance before his brethren was, we think, on the first Wednesday of July, when he took part in the discussion on alcohol at the Edinburgh Medico-Chirurgical Society, and at that time he showed no signs of diminished mental or physical vigour.

He was born in New South Wales in 1846, his father being a practitioner in Sydney. He studied medicine in this country, first in Glasgow, afterwards in Edinburgh. He graduated at the University of the latter city in 1872. In his early years as a graduate he devoted himself with much enthusiasm to the study of development, especially of the ova and to the structure of the ovary. When he obtained his Doctor of Medicine in 1875 he was awarded a gold medal for his thesis on "Contributions to the Normal and Pathological Anatomy of the Ovary and Parovarium." Although his early work might have suggested adhesion to the scientific side of his profession, he early became assistant to Dr Thomas Keith, and afterwards to Dr

George Keith, and when the latter retired from active practice his work was taken over by Dr Foulis.

As a practitioner Dr Foulis was most successful, and no man could be more valued by his patients than he was. He gave himself to them, and he neither spared time nor strength in their service. While thus devoting his highest energies to the duties of a family practice, he continued to interest himself in the subject of development, and even found time for a certain amount of investigation, the results of which were communicated to the Medical Societies at different times. Two of these dealt, one with the development of the testicle, the other with the origin and development of the umbilical cord and its relations to the amnion. We are not qualified to express an opinion as to the merits of these papers, but that Dr Foulis should have attempted such enquiries was but an index of the strong and independent mind of the man, and of the scientific bias given to him by his earlier anatomical studies.

Of late years he took an enthusiastic interest in the question of the spread of infectious diseases by means of milk. On this question he was ever in the forefront, and both with tongue and pen insisted on the necessity of sterilizing milk that was to be used for food, especially for children. In this, as in all other things that he took up, he was an enthusiastic partizan. He was endowed with considerable oratorical faculty, which would have made him a powerful speaker had his calling been such as would have educated his gift. As it was he was often effective, and always interesting. There was often a genuine earnestness of manner and of conviction which commanded attention, and whatever views he held or expressed were supported by a fearless courage. One other gift he possessed may be mentioned, namely, his faculty of imitation. We remember an admirable demonstration he gave not long ago at the Medico-Chirurgical Society of the action of the tongue and epiglottis in an epileptic fit.

He died of a long-standing cardiac lesion, which had become markedly worse within recent months. R.

William Anderson, M.D., of Richmond, Surrey

To the younger generation of Edinburgh practitioners, his name is probably unfamiliar, but those who graduated in the early "sixties" will remember William Anderson as one of the most fascinating personalities of their student days—more especially will those who survive of the Residents between 1860 and 1862 recall with pleasure the memory of the handsome features and

quaint humour of their delightful comrade. He was born on September 1st, 1838, educated at the High School of Edinburgh, then for a short time at Queen's College, Cork, under the superintendence of Dr Fleming, and eventually studied Medicine at the University of Edinburgh. After a successful undergraduate career, chiefly spent in the wards of the Infirmary, for he was devoted to practical work, he graduated in August 1860. In November of the same year he was offered and accepted the post of Resident Physician in the wards of Dr Warburton Begbie. That great physician and delightful man became one of his warmest and firmest friends. After a period of study in Berlin under Virchow, he again came into the Residency as House Surgeon to the late Dr Gillespie.

He then became one of the Residents at the old General Hospital of Birmingham, a post of great responsibility, where he gained a large amount of valuable experience. He was then for a short time partner of Dr Spencer Thomson in Leicestershire, and in 1867 he joined Dr Hassall of Richmond as partner in his very extensive and lucrative practice. Soon becoming senior partner, he was most fortunate in being able to secure the help of two most loyal and energetic junior partners, Drs Fergusson and Matthew Gardiner, who joined him at different dates from Scotland. For thirty years the name of Anderson of Richmond was well known in London as one of the best men in general practice in the Home Counties. For the last five years the state of his health warned him to take less work and more play. Having on the death of his father succeeded to his beautiful home of Hallyards, on the lovely Manor Water, he was glad to spend the summer months there, where he died on September 19th, 1901, after some weeks of suffering from gout, which had affected his eyesight, and caused much bodily and mental depression.

Anderson was a many-sided man; a most painstaking, judicious, and successful practitioner, with a gentle manner, which was the outcome and reflection of the solicitude he felt for every patient.

He was a capital sportsman, a good and keen shot, and rode well to hounds in his younger days, and was at home in the saddle to the last. An excellent judge of a horse, he was interested and well informed on country pursuits, and a valued adviser on questions affecting sanitary or social progress. He was a well-read man, loved poetry and historical associations, especially if connected with Peeblesshire or his beloved Manor Water. He was a delightful companion, full of the quaint Scotch humour, in which the laughter is never far away from tears. His friends had hoped for him a restful

eld in Scotland and Surrey, for he had well earned a time of rest before the end, which came so suddenly. He is survived by his widow, a daughter of an ancient Border house, and by two daughters. J. B.

New Books and New Editions

Ulceration of the Bladder: Simple, Tuberculous, and Malignant. By E. HURRY FENWICK, F.R.C.S., Surgeon to the London Hospital; Surgeon and Pathologist to St Peter's Hospital for Urinary Diseases; Consulting Surgeon to the West Herts Infirmary. 8vo, pp. 85. London: J. & A. Churchill. 1900. Price 5s.

Operative and Inoperative Tumours of the Urinary Bladder. A Clinical and Operative Study based on five hundred cases. By E. HURRY FENWICK, F.R.C.S. 8vo, pp. 115. London: J. & A. Churchill. 1901. Price 5s.

BOTH of these books are good examples of the kind of work which contributes to the fame of the author and the benefit of the reader. Unlike many other professional books they justify their existence to the reader, and are welcome,

Ulceration of the Bladder claims to be "a special study of a difficult and an obscure subject." The facts recorded "have been selected from clinical notes of patients who have been under observation long periods of time—some ten or fifteen years." This prolonged observation enormously enhances the value of these records. The first case of solitary simple ulcer which came under the author's notice was that of a patient who suffered from hæmaturia and constant penile pain, and was proved by the cystoscope to have an ulcer on the posterior wall of the bladder. Operation was not permitted, but the case was watched and progress reported year after year. After seven years the symptoms diminished, and two years later still they had disappeared. Again, a married lady, about the age of thirty-five, suffered from severe cystitis for three years, and had to wear a urinal, as she micturated every half hour. Ulcers were present, covered with thin phosphatic crusts. The ulcers were scraped without improvement at first. Every few weeks the scraping was repeated, and at last after fifteen performances, the bladder healed and gradually regained its capacity till it could hold six ounces. The lady was under observation eight years, and at length was able to write, "I am as other women in

retaining urine." When cases such as these with records of long observation are multiplied, a really sure foundation is laid for diagnosis, and treatment, and prognosis.

The author divides vesical ulceration into simple, tuberculous, and malignant. The simple ulcer is usually solitary, and Fenwick indicates interesting points of resemblance to gastric ulcer. "They both occur on the posterior wall of the viscus, near an orifice. The vesical ulcer on the posterior wall, near the ureteric orifice; the gastric ulcer near the pylorus. Both chronic forms are usually solitary. Both may originate in lymphoid nodules. In both the chief symptom is profuse hæmorrhage. Both tend to scar, and their cicatrices to warp the normal contour of the viscus." The symptomatology is very carefully worked out, and well illustrated by cases. The prognosis of the solitary simple ulcer is considered "very hopeful" if it be treated in the first stage. "Curettage and excision yield such good results that they should be undertaken as soon as possible." During the late stages much less can be done.

In dealing with the malignant ulceration of the bladder, the author distinguishes between malignant tumours which ulcerate, and the primary epitheliomatous ulcer of the wall. It is this he studies in the last chapter, and he compares it in its early stages with rodent ulcer or epitheliomatous ulcer of the skin. It is not common; it causes after a time very distressing symptoms which are not easily treated. The tuberculous ulcer is discussed at greater length. The manner in which Fenwick deals with this very important subject and the confidence to which his experience has brought him may be gathered from passages such as this. After stating that, as is well known, the bladder may be affected with tubercle in three ways—primarily, no other deposit being found—by extension from some other part of the genito-urinary apparatus—or through the blood-stream from some focus outside the genito-urinary tract, he writes: "I submit, and attempt to show, that each of these classes can be recognised cystoscopically when they are in their *earliest* stages; that each has a distinct prognosis of its own; that each has an appropriate treatment, and that if the disease has to be combated with any reasonable hope of cure, each case must be detected *early*, classified rightly, and treated not by any fixed method applicable to all, but on lines which seem most adapted to that particular class." Or this "I repeat most emphatically that the solitary simple ulcer and the solitary tuberculous ulcer heal under active curettage in the early stages, but the diffuse primary vesical tuberculosis is made infinitely worse by such a procedure. The disease is merely disseminated," etc. Compare

the interesting "Axioms" on page 72. Doubtless it is difficult for anyone who has not had an experience as rich as Mr Fenwick's to check his statements, and it would interest us to learn what he might say (or *think*) after some years on these subjects about which he is so dogmatic to-day, or to hear what other authorities have to say about them now; but the records of cases seem to have been carefully kept, and the deductions to be sound.

The same welcome features are to be recognised in the book on Tumours of the Urinary Bladder. The basis of division of the various classes of tumours is again "clinical" and practical; rules for cystoscopy are given, and the difficulties that may arise enumerated and explained. There is page after page of interesting and instructive statements with regard to the symptoms, treatment and prognosis of the benign, the villus-covered malignant and the "bald" malignant growths. The book is one written upon the author's wide experience, not without comparison with the experience of others, and accordingly it may be trusted and enjoyed by those who seek help in dealing with the subject of which it treats.

The author is—to use a phrase we have heard from a lawyer's lips—"a man of considerable honesty," for he records his failures and bad results, following his misguided interference, amongst other brighter histories. But it takes, perhaps, only moderate courage for an expert to do that; it is almost a part of "the grand manner" in a surgeon to expose calmly a mistake now and again amidst the array of successes! Most of the pages in the two books are interesting because they contain fresh writing and illustrative cases, but, in addition, Mr Fenwick has at command a certain style of description which is always graphic, and usually legitimate enough. An example will be found in the book on bladder tumours in the enthusiastic description of the beauties of a villous papilloma disclosed by the cystoscope. But the style needs curbing. And are "nephrectomized" and "sessility" necessary? "*An* urinal" we know is correct, and has a faint scent of pedantry which may please some; but the use of "an" and "a" is really a matter to be governed by sound and not by "orthography"; one might as well say "an yule-log." Again—"There is a 'psychological moment,' if I may use such a term, . . . for examining the patient . . . in order to ensure a full bladder." But Mr Fenwick may *not* use such a term. That much abused phrase is a telling one in its proper place, but that is not to be found as a substitute for "physiological moment" or "physical moment." "Theological moment" would have been equally relevant!

Illustrations are found in sufficient number in each book;

they vary in "finish," but they *illustrate* the text, and increase the value of two small works which seem to us admirable practical guides to the study of those diseases of the bladder of which they treat. "LITHOTRITE."

Hernia: Its Etiology, Symptoms and Treatment. By W. M'ADAM ECCLES, M.S.Lond., F.R.C.S.Eng., Assistant Surgeon, West London Hospital and City of London Trust Society; Examiner in Anatomy to the Society of Apothecaries; and late Demonstrator of Operative Surgery, and Senior Assistant Demonstrator of Anatomy, St Bartholomew's Hospital, etc. 8vo, pp. 231. London: Baillière, Tindall & Cox. 1900. Price 7s. 6d.

IN his preface the author states that the aim of this book "is not to present the history of the subject of hernia, whether from the point of view of etiology or treatment, but to submit a short account of the origin, symptoms and treatment of a lesion which by its very frequency is of considerable importance, and one that teems with practical suggestions." [A lesion which teems with practical suggestions is surely not a common one!] "No attempt has been made to deal exhaustively with any division of the theme, for this has been done in the excellent monographs that are extant, but special pains have been taken to chiefly consider the aspect of actual treatment." Mr Eccles has wisely refrained from adding to the monographs on hernia, but he would have been well advised had he still further curbed his pen, and restricted himself to the pages in his book containing a discussion of subjects not already amply treated in other works. There are such pages, excellent pages too, but they do not constitute a *book*. "Special pains have been taken to chiefly consider the aspect of actual treatment"; but "actual treatment" claims only half the work, and that half of course includes much that has been adequately discussed in other works over and over again. Pages are added to the book—and this is scarcely consistent with the author's avowed aim—by the simple device of giving a separate line to a word, or two or three words, whenever any enumeration of "varieties," "causes," etc., offers an excuse. Thus we have got only as far as page 2 when we find—

"Herniæ may be—

1. Inguinal.
2. Femoral.
3. Umbilical."

And so on through a list of ten varieties till eleven lines of the page are thus consumed. Short paragraphs follow to this effect:—

"Inguinal herniæ are those which protrude in the inguinal

region, and most commonly through the deep abdominal or inguinal ring.

"Femoral herniæ escape by the crural ring and femoral canal, on the inner side of the femoral vein, into the upper part of the thigh."

"Umbilical herniæ pass through the aperture at the navel." And thus the book is built up!

The comparative frequency of the three chief varieties is stated correctly—though some surgeons might not judge so from their practice—as follows (approximately per cent.):—

	Inguinal.	Femoral.	Umbilical.
Males . . .	96	2½	1
Females . .	50½	33½	16

Inguinal hernia thus being seen to be commoner than femoral, even in women.

In discussing the points for and against operation for strangulated hernia in comparison with taxis, one of the disadvantages of an operation is stated by the author to be the "not inconsiderable amount" of time absorbed in securing asepsis, and if this is taken in conjunction with the description on page 125 of the antiseptic preparations there stated to be needful, it is evident that Lockwood's experiments and conclusions at all events are not accepted. And the next objection scarcely seems a formidable one, viz., that the profuse vomiting which usually occurs makes the administration of the necessary anæsthetic "highly hazardous"; for till the patient is anæsthetised the vomiting is not dangerous, and when he is anæsthetised he ceases to vomit.

The chapters dealing with herniotomy, both for strangulated hernia and for the radical cure of unstrangulated hernia, and the chapter on trusses, especially the latter, are well written. When the strangulated bowel is dead, three lines of possible treatment are indicated—opening the dead portion without dividing the stricture; secondly, dividing the stricture, drawing down the bowel, and, after removing the gangrenous part, forming an artificial anus; and, thirdly, enterectomy and anastomosis. This last is properly termed "the ideal plan," when the patient's condition permits it. As regards the first, the author considers that if the stricture be left undivided, there is some danger of not giving free relief to the obstructed intestine, but adds, "As a rule, however, *it would seem* that . . . the stricture will allow of the passage of the contents through the artificial anus." "It would seem" is too uncertain for such critical circumstances, and if text-books are consulted, the reader of them may be surprised to find what difference of opinion exists with regard to

this practice. If it cannot be depended on to relieve the obstructed intestine, the practice should be condemned; and we know of a case in which the *sectio* proved that the obstruction had not been removed by such a procedure.

The pages dealing with treatment by a truss are the best in the book, and much will be found in them which could only with difficulty—if at all—be extracted from other works. We note the following points: the skein of wool truss for hernia in children is absolutely condemned as quite useless "in any but the simplest of cases"; an ordinary truss should be worn three years to effect a cure in an infant; very clear rules are given for measuring for and applying a truss; the "Salmon and Ody," and of course, the "Moc-main" trusses are condemned, and one "with a spring *considerably larger than* a semicircle" is recommended for the majority of herniæ.

As regards operation for radical cure of hernia, Mr Eccles thinks it is a mistake to "pass any suture to diminish the size of the inguinal canal" in the congenital hernia of boys, only the sac requiring to be dealt with; and his views on the choice of an operation may be gathered from a paragraph worthy of consideration, in which he writes: "It will be seen from the above remarks that a uniformity of procedure in suturing this canal implies that all inguinal herniæ are alike, and require similar treatment—a fact which experience entirely and necessarily discredits, each case having to be dealt with on its own merits." We can find no description of the so-called Infantile Hernia in which the hernia descends in a sac of its own alongside of a partially or wholly unclosed processus vaginalis; such a condition would puzzle an inexperienced operator, and an explanation of it should have found a place in pages which would otherwise be very useful to him. The author advises the use of a truss after operation, in all cases healing after suppuration, in children with badly-dilated apertures or with a family history of hernia, in adults of both sexes when the hernia was acquired and had existed for a considerable time, in people with arduous occupations, and in cases after operation for *direct* inguinal hernia—a fairly long list which will commend itself to some surgeons and be scorned by others. "LITHOTRITE."

A Contribution to the Study of the Blood and Blood Pressure. By GEORGE OLIVER, M.D. (Lond.), F.R.C.P. Pp. 276, with 51 Figures and Diagrams. London: H. K. Lewis. 1901. Price 7s. 6d.

DR OLIVER'S name is already well known to all who have made a special study of the pulse and circulation. The results of

some of his observations in this field of research were published in 1895 in a small volume entitled *Pulse Gauging*, and since then further portions of his work have appeared in the Croonian lectures, and elsewhere. All who have worked along similar lines must admit that Dr Oliver's work is of the highest order. He recognised the need of other instrumental methods of observation of the pulse to supplement the results afforded by the sphygmograph, and he has provided us with a reliable means of determining the radial calibre. He has also invented a hæmodynamometer by which the arterial and venous blood pressures can be estimated in man.

Dr Oliver has considerably amplified and extended some of his previous results and now publishes them, in collected form, in the present volume. The author's valuable researches on the action of certain of the animal extracts on the calibre of the arteries, are not included in this work.

The first chapters of the book are devoted to a description of the apparatus and the methods of observation which enabled the author to make an accurate inquiry into the physiology of the red corpuscle. In his hæmoglobinometer, the author employs the colour standards of Mr Lovibond, and the examination of the colour of the blood is best conducted by candle-light. The hæmocytometer is conceived on a most ingenious and perfectly sound principle. The method is based on the following facts:—

(*a*) When a candle flame is viewed through a glass tube containing water, a transverse line of bright illumination is seen, consisting of closely packed minute images of the flame produced by the longitudinal fibrillation of the glass.

(*b*) When some fixing fluid is added to the blood, the mixture presents a certain degree of opacity according to the amount of blood, or of the fixing fluid.

(*c*) The opacity thus produced completely shuts out of view the illuminated line, until, on diluting further, a definite point is reached, when it can just be detected as a fine thread of light across the tube.

Repeated observation has shown that the development of this delicate horizontal line by dilution of the fixing fluid selected is a very sensitive indicator of the percentage of the blood corpuscles. A microscopical examination of the blood is a useful addendum to the observation.

In Chapter III. the author discusses the normal variations in the hæmoglobin and the corpuscles, and also some of the pathological variations included in the two groups—oligocythæmia and polycythæmia.

The remaining chapters of the work will, we think, prove

specially interesting to most physicians. To study, in a scientific and reliable manner, the blood pressure and the variations incidental to the arterial wall, has been Dr Oliver's object, and in order to gauge these important features of the circulation, new instrumental methods of observation were essential. To overcome the manifest difficulties encountered in determining the blood pressure in man, Dr Oliver has shown very great ingenuity and originality. He has carefully considered the matter from every point of view, and has arrived at the following conclusions:—

(1) That the blood pressure in man can be correctly estimated through a fluid medium, but not through a solid one.

(2) That variations in the resistance of the tissues do not vitiate the correct reading of the mean arterial blood pressure.

(3) That variations in the calibre of the arteries do not disturb the reading of the mean arterial pressure.

(4) The adoption of the fluid principle obviates the errors due to the malposition of the solid pad and to abnormal conformation.

Dr Oliver's hæmodynamometer, or blood-pressure gauge, consists of two main parts—(1) the pad; and (2) the recorder. The pad is made of thin rubber, and is filled with water containing a little glycerine. It is placed over the radial artery and transmits the pulsations of the vessel to the recording apparatus.

The principle followed is to equilibrate the fluid pressure within the pad to that within the artery, so that when that point is reached, the two pressures being exactly balanced, as it were, and the pad then being but a diverticulum of the artery, the maximum motion of the pulse-wave is developed. In principle it is identical with the sphygmometer of Hill and Barnard, but it is a more convenient form for clinical use.

We have tested both these instruments together on a series of patients in order to ascertain how the readings would compare in estimating a blood pressure. With Dr Oliver's instrument a much higher mean arterial pressure was invariably indicated. We are, therefore, of opinion that there is still no ready and accurate means of estimating the arterial blood pressure in man. Dr Oliver's observations with his hæmodynamometer are reliable, so far as the instrument determines, and in his hands supply valuable information; but what we wish to emphasise is that there is, as yet, no means available to the general practitioner, of estimating the blood pressure clinically in a manner at all comparable to taking the temperature.

The other instrument devised by Dr Oliver—the arteriometer—is used to measure the calibre of any superficial artery.

Two conditions must be observed in order to make the reading as reliable as possible—(1) the wrist must always be extended at a uniform angle; and (2) the same part of the artery must be observed on all occasions.

We have a high opinion of the value and scope of usefulness of this little instrument. We have used it frequently and have found it to indicate a diminution of the radial calibre when the finger judged the artery to be contracted. Dr Oliver has made very numerous observations on the calibration of the arteries in health and disease, and some of his results are extremely suggestive. We are interested to note that he has failed to detect a direct relation between the evidence of a high radial calibre and that of venous pressure above the average, and that he has repeatedly met with low readings of the radial calibre when venous pressure was exceptionally high. These statements are in direct opposition to the assertions of Leonard Hill and others who hold that engorgement of the venæ comites of the radial artery may vitiate the reading of the radial calibre, and may even mislead the observer in his ordinary tactile examination of the pulse. Hill also believes that the distension of the venæ comites often modifies the sphygmographic tracing in a marked manner. Our own observations would lead us to agree with Dr Oliver, and to state that, clinically, such interference need only be considered in a very small number of cases. According to Hill's experiments, the power sometimes attained by venous pressure is enormous. An analysis of his tracings would seem to indicate that the distended venæ comites are capable of lifting the pad of the sphygmograph through a greater distance, and therefore with a force greater than that exerted by the systole of the left ventricle. It is surely seldom, if ever, that venous pressure can attain this power.

Dr Oliver proceeds to a consideration of the normal variations of the blood pressure under various physiological conditions, and then to certain clinical variations produced by massage, cold baths, etc. We cannot speak too highly of the scientific value of this unique contribution to physiological medicine. The work is full of information which will prove suggestive in the highest degree both to the physician and to the general practitioner. H. O. N.

A Manual of Syphilis and the Venereal Diseases. By Drs HYDE and MONTGOMERY of Chicago. Second edition. London: W. B. Saunders & Co. 1900. Price 17s. net.

FROM the prefaces we gather that the plates from Mraček's "Atlas of Syphilis" were not in the first edition of this book,

and as the chief attraction in the volume is these plates—the reproduction of which is very creditable—we feel some surprise that the work should have reached a second edition at all. The reproduced plates, other than Mraček's, are passable, but the few original illustrations are poor, some so much so—as the illustration on page 213—as to be quite useless.

Throughout the 278 pages on Syphilis no attempt is made to give a clinical picture of the disease, and the plan on which this part of the book is written seems to be that the authors have made a list of the various organs and tissues of the body, and have attempted to give a description of the result of syphilis upon each. Fifty-six pages are devoted to Syphilis of the Skin, whereas Syphilis of the Nervous System is dismissed in seven. The authors make out but a poor case for the abolition of the division of syphilis into primary, secondary, and tertiary manifestations, proposing instead to divide cases of syphilis into—

1. Benign syphilis, with mild and transitory symptoms.
2. Benign syphilis, with relapsing or persistent superficial symptoms.
3. Malignant syphilis, with relapsing or persistent profound symptoms.
4. Malignant syphilis, with relapsing or profound lesions, that are ultimately destructive.

How this is to take the place of the division into primary, secondary, and tertiary manifestations is not quite clear.

Everywhere there is an unnecessary verbosity of description, and that often of conditions not specially syphilitic. Thus on pages 154, 155, there is a description of rarefying, formative and condensing ostitis which would be much more in place in a book on pathology. Again one page out of the seven devoted to Syphilis of the Nervous System is occupied by a description of the Argyll-Robertson pupil in locomotor ataxia. In connection with Tabes (page 183) there occurs: "Patients affected with these sequels of syphilis are in the category of those little benefited by treatment for specific disease. Here, as in other ailments following infection, it seems that the result is less directly due to the toxic agents of the malady than to some chain of factors set in operation by the syphilitic germ." What is the meaning of this?

Is the subject of Syphilitic Dactylitis (page 156) not worthy a better pathological description and of a plate or illustration. The confusion which exists in the differential diagnosis between this and tuberculous dactylitis surely requires elucidation in a special book like this.

On page 162 "the modern view that all aneurisms not originating in trauma should be suspected to be syphilitic, is in

part due to the fact that iodide of potassium has proved of value in so many instances" may meet the facts of the case in America but scarcely does so here. In writing of syphilis of the lung (page 165), "These (syphilitic) lesions are found in the posterior and lower lobes of the lung oftener than in *its apices*, furnishing *thus* a valuable diagnostic difference between syphilis of the lung and the apical disorders of early pulmonary tuberculosis." Surely in gumma of the lung our safest guides are the history of the case and the effect of drugs rather than "localisation (not in apex); an apparent limitation of all symptoms, in certain cases, to the chest; the remarkably good thoracic development and general physique of many subjects of the disease; the frequent absence of fever; and the marked dyspnœa of some of the affected."

Among many other peculiar observations I select the following:—

Page 165: "Syphilitic lesions of the œsophagus are known only in the report of a few isolated cases, upon which some doubts exist *in consequence of their great rarity.*"

Page 171: "Syphilis is the cause of the majority of all cases of stricture of the rectum."

Page 175: "Tuberculosis in the testicle commonly begins with involvement of the prostate, and it is a malady *well nigh invariably of those who are not victims of the venereal disease.*"

Page 219: "Recurrence of nervous phenomena of a severe grade, a distorted cranium, and an idiotic mental state point to inherited syphilis of the child, even in the absence of any history of infection of one or both parents."

In dealing with the treatment of syphilis they write, page 224: "No treatment is superior in results to that directed with energy, *system*, and skill . . ." and on page 225: "In these pages the effort is made to set forth the treatment of syphilis on a rational basis, and *wholly independent of any system whatever.*" According to the authors the order of value of mercury in syphilis is protoiodide, bichloride, tannate, blue pill, calomel and grey powder. Finally, they consider (page 228) "The practice (of adding opiates to mercury) is a remnant of crude attempts at treatment instituted before the days of modern refinement in diagnosis and methods."

"Chancroid" occupies thirty-three pages, and is followed by a chapter on "Disorders not invariably venereal." It is curious to find under this heading "venereal warts," but it seems to us that the authors fail to differentiate venereal from ordinary warts.

It is with relief that one turns to "acute urethritis" and its complications, but here again one is disappointed. In a volume of such size and pretensions one would have looked for less that

is old and more that is new. A few illustrations of urethral conditions, as seen by the urethroscope, would have been much preferable to illustrations of the instrument. The book is certainly not one for the student; it is doubtful if it can be much use to the general practitioner, and except for Mraček's plates it is of little value to the specialist. "MUNSHI."

Lectures upon the Principles of Surgery. — Delivered at the University of Michigan, by CHAS. B. NANCREDE, A.M., M.D., LL.D., Professor of Surgery and of Clinical Surgery; Emeritus Professor of General and Orthopedic Surgery, Philadelphia Policlinic; Senior Vice-President of the American Surgical Association; Corresponding Member of the Royal Academy of Medicine of Rome; Member of the American Academy of Medicine; Late Major and Chief Surgeon, U.S.V., etc. With an Appendix containing a *résumé* of the principal views held concerning Inflammation, by WM. A. SPITZLEY, A.B., M.D., Senior Assistant in Surgery, University of Michigan. Illustrated. Philadelphia: W. B. Saunders & Co. 1899. Price 10s. 6d.

PROFESSOR NANCREDE has added to the number of books on the Principles of Surgery a volume of some four hundred pages which he hopes will acquit the author of a charge that may be brought against many others; he contends that it is obviously impossible to include in a few hundred pages the essentials of surgical pathology, bacteriology, and doctrines of surgery which tend to become obsolete, as well as those which are considered to-day to rest on a securer basis; "yet this," he writes, "has been attempted by many writers." The book is an interesting and fresh presentation of modern views mainly on inflammation, suppuration, the treatment of wounds, and the result of their infection; obviously, it is difficult to decide what should be included and what should not in the "Principles of Surgery," and each writer has his own ideas on the matter.

The view taken of inflammation may be seen from this passage: "The position that I assume is, I contend, the only logical as well as scientific one, viz., that inflammation is never anything but an infective process, yet pyogenic germs do not necessarily mean pus. What is seen during normal repair should not be termed inflammation, and while at certain stages presenting clinical and histological phenomena similar to those seen in inflammation, they are not identical processes due to the same cause." Many would say that whether "repair" may be described as showing some of the "inflammatory" processes

or not is largely a matter of nomenclature, and would doubtless vex Professor Nancrede much thereby. Hyperemia and its treatment are dealt with, and then the "Process of Repair." These are clearly described; the new connective tissue is described as formed from epithelioid cells, descendants of the fixed connective tissue cells and the endothelioid cells of the small vessels, and it is added, "Some authorities contend that the cells resembling leucocytes . . . really serve as formative cells." Under "Repair of Non-Vascular Tissues," we find, "The cicatrix in cartilage after aseptic healing remains long, if not always, fibrous; if a severe inflammatory (microbic) reaction takes place, the cicatrix will rapidly become hyaline, like normal hyaline cartilage."

A definition of inflammation is ventured on—"the series of results caused by microbic interference with the normal processes of repair in injured living tissues." Professor Nancrede thinks that students' minds are confused by the teaching that the presence of germs *always* means inflammation or the disease which is associated with the particular microbe, whereas they should be taught that "to produce their characteristic effects germs must be present *in sufficient numbers to overcome the vital resistance of the tissues.*" The thought seems to weigh on the author's mind; but we meet with no signs of this confusion, nor of any lack of such obviously true teaching. "Inflammation" occupies six out of the thirty-six lectures; the usual short paragraphs on "Heat," "Cold," "Astringents," etc., are found under "Treatment," and it is a question whether there is much value in the extremely general statements with here and there a digression into minute particulars as to poultices, ice and so on, such as one finds in books on "principles." But there is an interesting paragraph on "Starvation of an inflammation" dealing with the temporary or "permanent" arrest of blood to an inflamed part, and suggesting that, though such treatment is scarcely considered now-a-days, the main artery of a limb should perhaps be ligatured in order to combat septic inflammation of a joint before amputation is resorted to. Anyone who has noted the effect on a septic hand of ligature of the brachial artery for hæmorrhage from the palm will be able to support the suggestion.

There are some clear paragraphs on "Changes in Blood." The author states that he often observed *as long as twenty years ago* that an exceedingly limited suppurative inflammation will cause a distinct leucocytosis. Cabot, he writes, depends so much on this that he would not "undress an open fracture, even when general symptoms would suggest the propriety of this, if no leucocytosis exists." Nancrede confirms the experi-

ence of Park and others "who state that a very decided, early and persistent increase of hæmoglobin indicates that complete removal" of a sarcoma "has been effected."

Chapters with the same mixture of new and old follow on various surgical diseases, and such subjects as Sterilization, Shock, and Anæsthesia. "LITHOTRITE."

A Manual of Personal Hygiene. Edited by WALTER L. PYLE, A.M., M.D., Assistant Surgeon to the Wills Eye Hospital, Philadelphia, etc. Pp. 344 8vo. Philadelphia: W. B. Saunders. 1900. Price 6s.

A DISTINGUISHED American heptarchy has constructed this useful volume, the individual articles being—"The Hygiene of the Digestive Apparatus," by Professor Stockton, of Buffalo; "The Skin and its Appendages," by Dr G. H. Fox, of New York; "The Vocal and Respiratory Apparatus," by Professor E. F. Ingals, of Chicago; "The Ear," by Professor B. A. Randall, of Philadelphia; "The Eye," by Dr W. L. Pyle, of Philadelphia, who has acted as Editor; "The Brain and Nervous System," by J. W. Courtney, M.D., of Boston; "Physical Exercise," by Dr G. N. Stewart, of Cleveland.

The object of the manual is to state the best means of developing and sustaining bodily and mental health; and such a volume can hardly fail to be appreciated not only by the medical profession and teachers of hygiene, but also by all who take an intelligent interest in the well-being and happiness of the race, and especially of children.

The method of the articles is to give the anatomy and physiology of each particular organ, followed by the necessary instructions as to how it may be maintained in health; and the absence of purely technical phraseology, together with the numerous explanatory diagrams and illustrations, render the text at once readily understood and interesting to lay as well as to professional readers. Certain subjects of general interest are dealt with by several of the contributors—each from his own standpoint; such subjects are eating, drinking, breathing, bathing, sleep, exercise, etc. These, along with the discussion of the influence of Heredity, Education, and Environment, are sufficient to ensure a wide distribution for this manual.

The proverb, "*Prevention is better than cure*," nowhere receives fuller illustration than in relation to individual health; and throughout this volume the question of prevention is treated as one of vital importance; "through disregard of the ordinary laws of hygiene," says one of the contributors, "many victims

are added yearly to the number who fall under the evil consequences of an outraged nervous system"; there is also reiterated frequently, but not, we think, unduly, how much both the physical and mental health of the individual depend upon himself and his rigid attention to the guidance of hygienic laws.

The book is well "up-to-date," and the reader is cautioned against treatment by unqualified persons, specially in affections of the Eye and the Ear. From the chapter on the Eye, we instance, in this respect, the following sentence:—"There is a class of opticians calling themselves 'scientific ophthalmists' and the like, who undertake to prescribe glasses as well as to sell them. It is hardly necessary to reiterate that it is dangerous to intrust the care of such delicate and intricate organs as the eye to the care of an optician who has only an interest in the sale of glasses." Along with such cautions, the little knowledge that is dangerous receives a due amount of attention.

In the chapter on the Brain and Nervous System outlets for high pressure cerebration are indicated, even the *cultivation of fads* (*stamp collecting* and the like) being recommended as valuable "mental ambitions." The discussion in this chapter of the effects of alcohol, tea, coffee, and tobacco upon the nervous system of the victims of overwork, worry, and mental "fag," is frank and commendable; and here, as in many other parts of the book, the non-medical reader will feel he is obtaining the frank counsel of capable men whose sole purpose in writing is to endeavour to promote the health and happiness of their fellows.

A subject of special interest to the members of the teaching profession is that of School Hygiene discussed in the chapter on the Eye. Light, ventilation, dimensions of school-room, proper seating, regulation of study, the relation of the various factors of school life to the general health of the pupils are some of the topics dwelt upon under this head; and head-masters of schools will welcome this volume as a valuable contribution to a subject in which they are specially interested.

An excellent section on Physical Exercise concludes the volume.

Exercise is discussed in its relation to each period of life—childhood, youth, and adult life; and many valuable hints are given as to the amount and nature of exercises best adapted to promote and maintain good health. Lovers of the "club and cleek" will doubtless appreciate the following eulogy of their favourite pastime from the chapter on the Brain and Nervous System:—"Golf is one of the greatest boons, in the way of outdoor exercise, yet offered to the nervously weak of both sexes. It is excellent from an esthetic standpoint, because the player's

scene of action brings him face to face with nature under new and varied aspects. Nor is this its only virtue. The mind finds both restful and absorbing occupation in the calculation of distances, and in regulating the co-ordination of the muscles involved in the stroke." "D."

Dental Surgery; including Special Anatomy and Pathology: a Manual for Students and Practitioners. By HENRY SEWILL, M.R.C.S. and L.D.S. Eng. Fourth Edition. London: Baillière, Tyndall & Cox. Price 10s. 6d.

WE have with pleasure already favourably reviewed the previous editions of this excellent little work. There have been added, compared with the last edition, no fewer than upwards of two hundred pages of letterpress to the volume under notice, while all the improvements and more recent advances in this special branch of surgery have been embodied in what formed the subject matter of its earlier issues. The subjects of dental caries, excision, stopping, along with a description of the various amalgams—their characters and mode of use—are given in a considerably extended form, and the employment of different styles of porcelain inlays is dwelt upon at greater length than formerly. Perhaps the principal and most important feature in the new edition, however, is that of the "Appendix." This consists of three chapters—the first being devoted to the bacteriology of the mouth in reference to the teeth; the second to the methods of preparing sections of carious teeth for microscopical investigation; and the third to antiseptics in dental surgery. The illustrations are numerous, and the book altogether constitutes an admirable *résumé* of the matters of which it treats. It will be found an excellent text-book for the dental student.

Igiene della Bocca e dei Denti. Nozione elementari di Odontologia del Dott. LUDOVICO COULLIAUX, *Libero Docente di Odontoiatria nella R. Universita di Parma.* Milano: U. Hoepli, editore. Price L2.50.

THE title of this work so fully indicates its purposes and the nature of its contents that any detailed explanation of them in a notice of this kind becomes unnecessary. It is unmistakable that the volume has been very carefully compiled by the author, and that its subjects have been treated in a manner which should render it subservient to the Italian student's wants as a small standard of reference and instruction. As a favourable specimen of a work thus written to supply the requirements of

those studying or practising the special branch of which it treats, it bears evidence that in Italy the cultivation of this department is not behind the age in which dental literature finds so prominent a place. It is also satisfactory to see that the medical aspects of dental disease are here not subordinated, as is too often the case, to a disquisition on the mere mechanical repair of the ravages of disease on these organs, and the making of artificial substitutes for them when lost in this way. A number of useful formulæ are to be found throughout the pages of the work, as well as in an appendix. It is a scientific brochure which will be found serviceable in elucidating for the student many facts occurring in dental practice.

Cliniques Médicales Iconographiques. By P. HAUSHALTER, G. ETIENNE, L. SPILLMANN, and CH. THIRY. 4to, 62 plates with 398 figures; 8 parts. Paris: G. Carré and C. Naud. 1901. Price 50 francs.

IF the quality of the whole of this work is to be judged from Part I., which is now before us, we heartily congratulate the authors and editor on the excellence of their performance.

The "Clinical Atlas" has now its recognised place in medicine, and it is therefore unnecessary to say anything in praise of such works in general. Their practical value depends not less on the nature of the subjects dealt with than on the qualities of the cases portrayed and the faithfulness of the reproductions. No better or more varied selection of subjects could, we think, be made for such a purpose than those outlined in the preface to this work, which emanates from the Nancy School: "progressive amyotrophies, infantile paralysis and hemiplegia, facial paralysis, peripheral neuritis, infantile spastic rigidity, hydrocephalus, Basedow's disease, myxœdema, chronic rheumatism, rickets, etc.," also "skin affections, trophoneuroses, syphilis, etc." The work is published in 8 parts, appearing monthly from May to December of this year, and it contains 62 plates with no less than 398 figures.

Part I. deals with progressive muscular atrophy (6 cases, 9 figures), the muscular dystrophies, chiefly of the Landouzy-Dejerine (or facio-scapulo-humeral) and Erb's juvenile types (16 cases, 40 figures), and a rare form of progressive spinal amyotrophy in infants (2 cases, 4 figures). The text, which comprises less than 50 pages, and is always subordinate to, and explanatory of, the plates, gives a clear and succinct account of the disease under consideration, without confusing by too many details; while the main clinical facts of each case are described and special attention is drawn to the various points

which should be seen on the plates. The individual cases are excellent, either as typical examples of the disease or as presenting points of special interest and, in some cases, of rare occurrence. The photographs are not less excellent, and the letterpress leaves nothing to be desired.

We heartily commend this work to our readers. It is not meant for the specialist, or any set of specialists, but will be found to be of interest and great practical value to all practitioners of general medicine.

A Retrospect of Surgery during the past Century; being the Hunterian Oration of the Hunterian Society, 1901. By JOHN POLAND, F.R.C.S., Surgeon to the City Orthopædic Hospital, etc. 8vo, pp. 97. London: Smith, Elder & Co. 1901. Price 5s.

HAVING been called upon to deliver the Hunterian Oration in the first year of a new century, Mr Poland naturally selected as his subject the present state of the surgical art as compared with what it was a hundred years ago, and an able summary of the progress of a century he has given us. Incidentally he has pointed out, as befitted the occasion of his address, in how many ways John Hunter was ahead of his own times, and in how many more he was abreast of ours. It was inevitable, however, that Mr Poland's oration should bear more upon the work of the master-surgeon of the nineteenth century than upon that of "the founder of scientific surgery" who made the previous century illustrious. Having lived through the great revolution, Mr Poland is pre-eminently qualified to contrast the surgery of the pre-Listerian era with that of the present day, and we venture to think that the great value of his address lies in the clearness with which he has drawn this contrast.

It is well that such addresses as that of Mr Poland should receive permanent form as contributions to the history of surgery. We cordially commend it to every student who would know what surgery was before the introduction of antiseptics and what it owes to Lister. "SCOT."

NOTICE.

All communications to the Editorial Department, including Exchanges and Books for Review, should be addressed to THE EDITOR, Dr W. RUSSELL, 3 *Walker Street, Edinburgh, and all business communications, including Subscriptions, Advertisements, &c., to* THE SUB-EDITOR, Dr NORMAN WALKER, 7 *Manor Place, Edinburgh.*

THE SCOTTISH
MEDICAL AND SURGICAL
JOURNAL

A CONTRIBUTION TO THE LOCALISATION OF THE MOTOR NUCLEI IN THE SPINAL CORD OF MAN

By ALEXANDER BRUCE, M.A., M.D., F.R.C.P.Ed., F.R.S.Ed.,

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IT is gradually being recognised that the motor cells in the anterior cornua of the spinal cord are arranged, not in a haphazard, irregular fashion, but in certain definite groups, which are more or less constant for each segment. Up to the present time, however, those who have devoted attention to the subject are not agreed as to the distribution of these groups. This want of harmony is in part due to the difficulty, which is by no means inconsiderable, especially with regard to the lumbo-sacral region, of enumerating the segments; and in part to the want of systematic examination of the arrangement of the cell groups themselves within each segment. As the result of such an examination I have described and figured[1] the following main groups in the lumbo-sacral region :—

A. A *mesial* group, which is capable of further sub-division into an anterior and a posterior part.
B. An *antero-lateral* group.
C. A *postero-lateral* group.
D. A *post-postero-lateral* group.
E. A *central* group.

In addition to these there are other groups of cells—an ntermedio-lateral, and a group internal to the antero-lateral,

[1] "Topographical Atlas of the Spinal Cord."

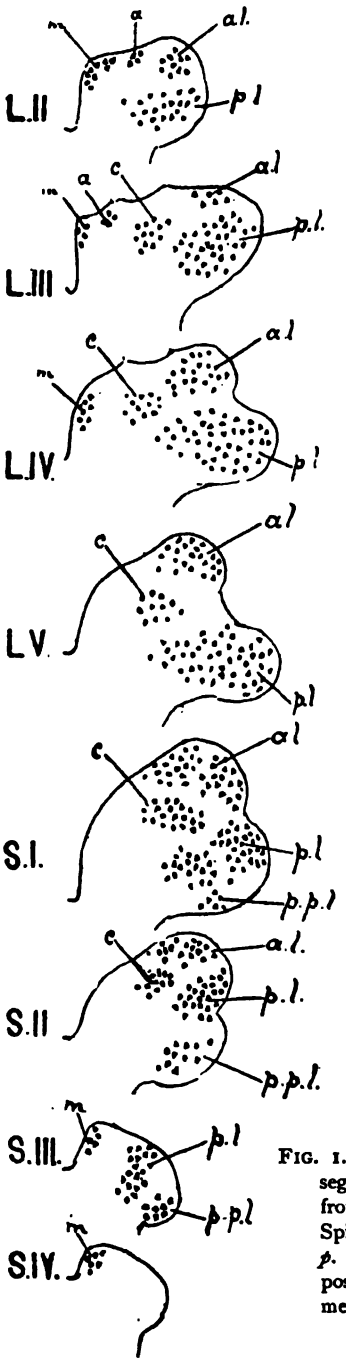


FIG. 1.—Diagram of the cell-groups in the spinal segments from L. 2 to S. 4 inclusive (reduced from the writer's "Topographical Atlas of the Spinal Cord"). *a. l.*, antero-lateral group; *p. l.*, postero-lateral group; *p. p. l.*, post-postero-lateral group; *c.*, central group; *m.*, mesial group; *a.*, anterior group.

which Onuf has designated by the letter X. As it is probable from their character that these do not innervate striped muscle, they will not be further referred to in this communication, nor will a small group found in the second lumbar segment immediately lateral to the mesial group, which I have termed the anterior group.

The *mesial* group extends from the first to the fourth lumbar segment, then, except for the presence of an occasional cell, is unrepresented in the fifth lumbar, first and second sacral. It reappears in the third sacral segment and is continued to the lower limit of the fourth, where it ceases entirely (Fig. 1, *m.*).

The *antero-lateral* group appears at the second lumbar segment as a small collection of cells at the corresponding angle of the cornu. It gradually increases in size until it forms a large and important group, which, here and there, indicates a tendency to further sub-division. Throughout the first and second sacral segments it diminishes somewhat rapidly and cannot be traced below the second sacral (Fig. 1, *a. l.*).

The *postero-lateral* group ex-

tends from the second lumbar to the lower limit of the third sacral, and attains its maximum development at the fourth and fifth lumbar segments (Fig. 1, *p. l.*).

The *post-postero-lateral* group, as it has been termed by Onuf, is situated immediately dorsal to the preceding one, and extends from the first to the lower extremity of the third sacral segments, reaching its greatest size in the second and upper part of the third sacral (Fig. 1, *p. p. l.*).

The *central* group lies internal to and between the two main lateral groups. It extends from the second lumbar to the second sacral segments (Fig. 1, *c.*).

The longitudinal extent of these various groups will be more readily followed from the annexed figure (Fig. 2).

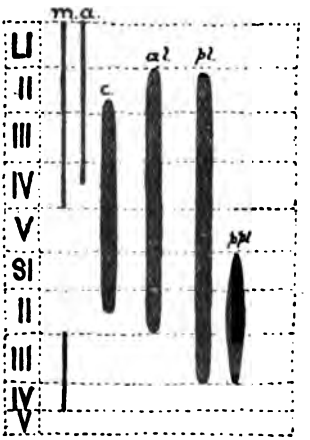
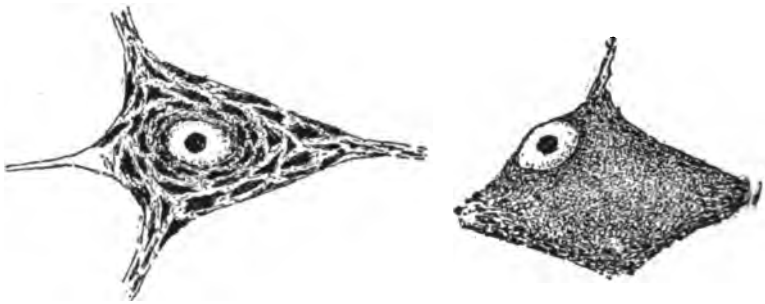


FIG. 2.—Scheme to show the longitudinal distribution of the cell-groups in the lumbo-sacral region of the cord. The letters have the same significance as in Fig. 1.

The constancy of the distribution of these groups of motor cells in the anterior cornu naturally suggests that each group has a definite function—in other words, is the spinal centre for definite muscles; but, until the discovery by Nissl of the change which occurs in the motor cells after section of the nerves which arise from them, no sufficiently exact method was available for the determination of the localisation of these centres. Nissl has shown that, when a nerve fibre is divided, the cell from which it arises undergoes certain characteristic changes, viz., the chromatic elements become gradually replaced by a finely granular, almost homogeneous material, which stains faintly with aniline dyes, and is diffused throughout the whole cell. This change affects the dendrites as well as the body of the cell, so that they stain feebly; and in consequence the cell, when viewed under low powers of the microscope at least, seems to have more or less completely lost its angular character, and to be denuded of its processes. The nucleus of the cell leaves its central position and tends to

project at one side of the cell. The faintness of the staining, the rounded outline, and the eccentric position of the nucleus of the affected cell are in such decided contrast to the deeply-stained "tigroid" appearance of the normal cell, with its pointed angles, well-marked dendrites, and central nucleus, that the identification of the cells which show the *réaction à distance*, as Marinesco has termed it, is a very simple matter (Fig. 3).

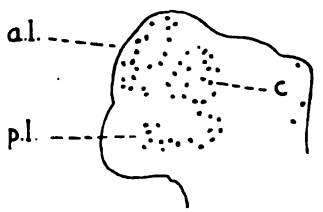


A B

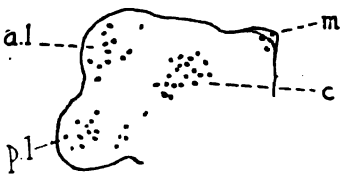
FIG. 3.—(A) Normal cell of anterior cornu. (B) Cell showing *réaction à distance* with eccentric nucleus and finely granular protoplasm.

This method of investigation may be used in two ways for the determination of the motor localisation in the cord. On the one hand, a nerve may be divided, or, what comes to the same thing, a muscle removed, and the position of the cells which show the *réaction à distance* ascertained. On the other hand, after an extensive removal of the muscles of a limb, a small group of muscles may be left attached to their motor nerves, and the position of the unaffected anterior cornual cells established. These normal cells accordingly represent the motor centres of the muscles which have not been removed.

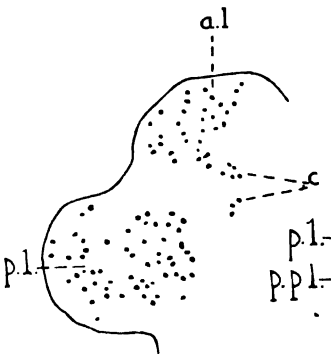
Such experiments can easily be carried out in animals, but in the human subject observations can only be made in those comparatively rare cases where death has occurred within the necessary limits of time—not sooner than fourteen days and not later than four months after the removal of a limb or part of a limb. Two such cases I have recently had an opportunity of examining, through the kindness of my



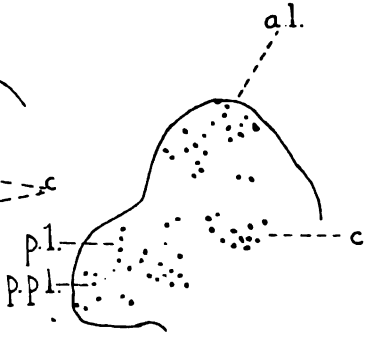
L.4.



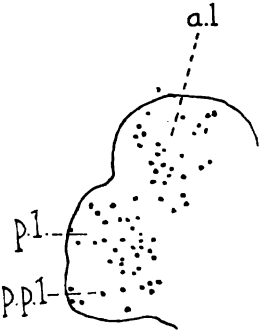
L.5. (lower)



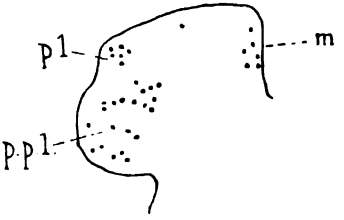
S.1.



S.2. (upper)



S.2. (lower)



S.3

S.4.

Normal Cells—black. Degenerate Cells—red.

PLATE V.—TO ILLUSTRATE DR BRUCE'S PAPER.

friends Mr Stiles and Dr Shennan, the surgeon and pathologist, respectively, of the Royal Hospital for Sick Children. In one instance the thigh had been amputated at its lower third, *i.e.* below the level at which its muscles receive their nerve supply. In this case, therefore, the only cells to undergo the *réaction à distance* would be those which innervate the muscles of the leg and foot. In the second case, a most extensive operation was performed for tubercular disease of the hip-joint and ilium, the whole of the lower limb with the acetabulum and ilium, and (at a subsequent operation for a sinus) the spine of the ischium being removed. From a careful consideration of the steps of the operation by Mr Stiles, I am convinced that the only muscles of the lower limb which were not taken away, or were not cut off from their nerve supply, were the *psoas-iliacus* and *pectineus*, the *obturator internus*, the *pyriformis* and *gemelli*. The pudic nerve was undoubtedly injured in the removal of the ischial spine, but whether in whole or in part I am not in a position to determine with certainty.

In the first case (Plate V.), that of amputation above the knee, the motor cells in the first four lumbar segments were found to be perfectly normal (Pl. V. Fig. 1, L. 4). In *the fifth lumbar segment, at its upper part*, some cells in the *postero-lateral group* showed the Nissl reaction. *In the lower part of the fifth lumbar segment* (L. 5) *the whole of the postero-lateral group was affected, while the antero-lateral, central, and mesial groups were found to be perfectly intact. In the sacral segments the antero-lateral, central, and mesial groups were normal, the reaction being confined to the postero-lateral and post-postero-lateral groups* (Fig. 4, E). The maximum reaction was found at the first sacral segment (S. 1), at which level the postero-lateral group is very large, and the post-postero-lateral begins to appear. In the third sacral segment (S. 3) the whole of the lateral group of cells in the anterior cornu was affected (no doubt because, as explained in my Atlas, the antero-lateral and central groups do not extend so low down); but the whole of the cells of the mesial group in this, as also in the fourth segment (S. 4), were perfectly normal.

In this case, therefore, the *centres for the muscles of the calf and those supplying the foot were situated in that part of the*

postero-lateral column of cells which lies between the upper limit of the fifth lumbar segment and its lower termination in the third sacral segment; and also in the post-postero-lateral group throughout its entire extent. This result is in exact agreement with that found by Van Gehuchten and De Buck (Fig. 4, B) in two cases of amputation of the lower part of the thigh, so that these columns of cells may be regarded as the centres for the muscles of the calf and those of the foot.[1]

Van Gehuchten and Nelis have shown (Fig. 4, A) that in a case of *amputation at the ankle* the *réaction à distance* was limited to the *post-postero-lateral group*, or, as the former terms it, the *secondary postero-lateral group.* If this is confirmed by subsequent examination, we may regard the post-postero-lateral column from S. 1 to S. 3 as the *centre for the intrinsic muscles of the foot*, and the *postero-lateral group from the fifth lumbar to the upper part of the third sacral segment inclusive* as the *centre for the muscles of the calf, and* what may be termed *the extrinsic muscles of the foot, i.e.* those which arise from the tibia and fibula. The exact lower limit is in all probability somewhat different in different cases.

In the second case which I examined, as already said, all the muscles of the lower limb were removed, with the exception of the psoas-iliacus, pectineus, the obturator internus, pyriformis, and gemelli. In addition, all the muscles supplied by the pudic nerve were probably cut off from connection with their motor centres. (It is to be remembered that the nerves to the coccygeus muscle and to the posterior part of the levator and sphincter ani arise from the fourth sacral root independently of the pudic nerve.) It was to be expected, therefore, in such a case, that the only motor cells

[1] There is this difference between Van Gehuchten and myself, that whereas he does not trace the postero-lateral column higher than the fifth lumbar (see Fig. 4, A, B, D), in my opinion it extends to the upper limit of the second lumbar segment, and therefore that part of it which is situated in the second, third, and fourth lumbar segments must innervate muscles higher than those of the leg. According to Van Gehuchten the postero-lateral cell column, as he describes it, is entirely devoted to the innervation of the muscles below the knee. It is to be noted, however, that we are in entire agreement as to the position of these spinal leg centres, and at variance merely as to the longitudinal extent of the postero-lateral column.

FIG. 4.—Scheme to show longitudinal extent of *réaction à distance* after amputation at various levels. Healthy areas black, degenerated areas merely outlined.

A

At ankle.
(Van Gehuchten and Nelis.)

B

At knee.
(Van Gehuchten and De Buck.)

C

At knee.
(Bruce and Stiles.)

D

At hip.
(Van Gehuchten.)

E

At hip, with removal of ilium.
(Bruce and Stiles.)

in the lumbo-sacral region left intact would be those for the psoas-iliacus, the obturator internus, the pyriformis and gemelli, and the coccygeus and the posterior part of the levator and sphincter ani. It was found in this case that the amount of the *réaction à distance* was much more extensive than in the first case, and that, with certain exceptions which will now be described, it affected the whole of the cell columns in the lumbo-sacral region below the first lumbar segment, which was normal.

In the upper part of the second lumbar segment (Plate VI., L. 2, upper) some cells in the posterior part of antero-lateral group were affected, while the remainder of the antero-lateral, the whole of the postero-lateral and mesial groups were normal. In the lower half of the segment (L. 2, lower) degenerated cells were found in increasing numbers in the antero-lateral and postero-lateral groups, but were still considerably outnumbered by the normal cells.

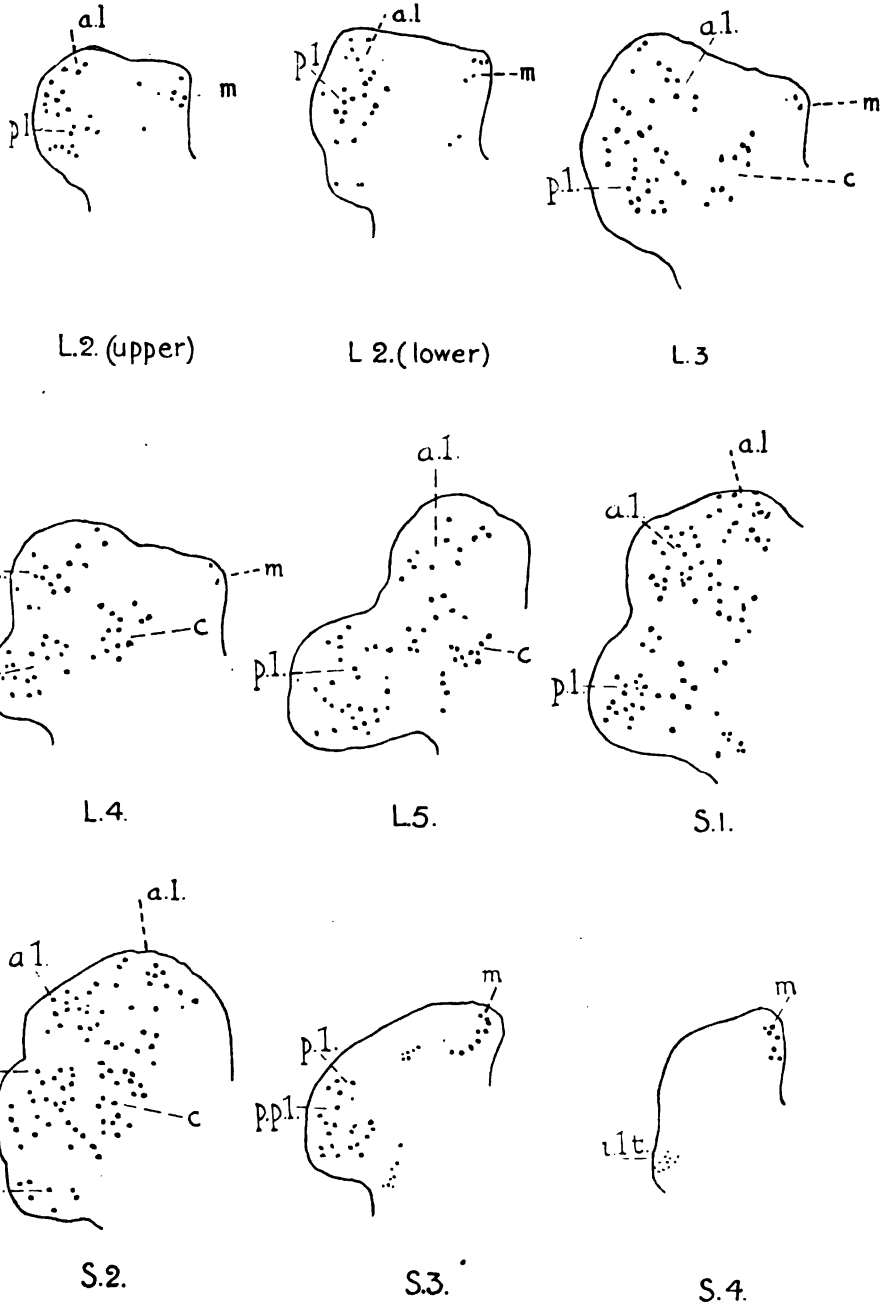
In the third lumbar segment (L. 3) normal cells were still present in both of the lateral groups, but their number rapidly diminished as the lower limit of the segment was approached, while, on the other hand, the degenerated cells became very numerous. In the central group several of the cells were normal. The mesial group was entirely normal.

In the fourth lumbar segment (L. 4) the cells were practically all degenerated in both of the lateral groups, and in the central group. The mesial group, however, remained normal.

Of the fifth lumbar segment (L. 5) the same may be said. The lateral and central groups were degenerated; the mesial remained healthy.

In the first sacral segment (S. 1) normal cells again appeared, and gradually increased throughout the antero-lateral group until they formed a considerable proportion of its cells in the lower part of the segment. An occasional normal cell was found in the central group, but the postero-lateral was entirely degenerated.

In the second sacral segment (S. 2) a large proportion of the cells in the anterior part of the antero-lateral group remained normal, and an occasional normal cell was found in the central group. The hinder portion of the antero-



Normal Cells—black. Degenerate Cells—red.

PLATE VI.—TO ILLUSTRATE DR BRUCE'S PAPER.

lateral, the postero-lateral, and the post-postero-lateral groups were affected throughout.

In the third sacral segment (S. 3) there were no normal cells in the remaining portion of the lateral groups (viz., the postero-lateral and post-postero-lateral). The mesial group, which had reappeared, contained a few healthy cells, but the majority had undergone the Nissl reaction.

In the fourth sacral segment (S. 4) the mesial group, which alone persisted, was almost entirely degenerated, but the proportion of normal cells was considerably greater than in the preceding segment.[1]

To sum up the results of the examination of this second case, we have seen that there were unaltered cells in three separate positions in the lumbo-sacral cord—(1) within the second and third lumbar segment in the antero-lateral and to a less extent in the postero-lateral and central groups; (2) within the first and second sacral segments in the ventral part of the antero-lateral group; (3) within the third and fourth sacral segments in the mesial group of cells.

The distribution of the affected cells is shown in Fig. 4, E, where the portions of the antero-lateral groups remaining unaltered has been represented black. The lower mesial group (m^1) in the third and fourth sacral segments, although affected, has been left black.

We have also learned that in the removal of the limb the following muscles were left in connection with their nerve centres—(1) the psoas-iliacus and pectineus; (2) the obturator internus, pyriformis and gemelli; (3) the coccygeus and the posterior parts of the levator and sphincter ani.

The anatomical distribution of the nerves in the lumbo-sacral region indicates that the psoas-iliacus and pectineus are innervated from the second and third lumbar segments chiefly; the obturator internus is innervated from the first and second sacral segments; and the pyriformis from the second sacral. It seems therefore clear (1) that the psoas-iliacus and pectineus have their centre in the unaffected cells in the antero-lateral, postero-lateral and central groups of the second and third lumbar segments; (2) that the centres for the

[1] Nissl's reaction was found in the cells of the intermedio-lateral group. These, therefore, probably supply some organ through the internal pudic nerve.

obturator internus, pyriformis and gemelli are situated in the ventral portion of the antero-lateral group in the first and second sacral segments.

The mesial group in the third and fourth sacral was partly normal and partly degenerated. The explanation of this is not so clear as that of the conditions already described. It seems practically certain that the pudic nerve had been injured in its course round the spine of the ischium, and that the perineal muscles (with the exception of the posterior portions of the levator and sphincter ani, and of the coccygeus muscle which receive their nerve supply directly from the fourth sacral nerve within the pelvis), had thus become disconnected from their nerve centres. Hence the mesial group of the third and fourth sacral segments was partly affected and partly normal—a double proof of its connection with the perineum (urethra and anus). In further support of this is the escape of this group of nerve cells in case 1 (Fig. 1, S. 3 and S. 4), where in S. 3 the whole of the postero-lateral and post-postero-lateral groups were degenerated.

The examination of these two cases has established the centre for the psoas-iliacus and pectineus, the obturator internus, pyriformis and gemelli; the muscles of the leg and foot; and lastly, for the muscles supplied by the internal pudic nerve.

With regard to the localisation of the other lumbo-sacral centres, much information may be gained by contrasting the results just described with those obtained by Van Gehuchten, Nelis, De Buck, Sano, etc.

As already stated, the intrinsic muscles of the foot have their centres in the post-postero-lateral groups of the first, second, and third sacral segments, especially in the second. The centres for calf and extrinsic foot muscles occupy the whole of that part of the postero-lateral group which lies below the fourth lumbar segment, namely, in L. 5, S. 1, S. 2, and upper part of S. 3. The remaining muscles of the lower extremity must have their centres in the remaining groups of cells of the lumbo-sacral region, namely, in the postero-lateral group above the fifth lumbar (considered by Van Gehuchten to be part of the antero-lateral group), the antero-lateral and central groups.

A case of Van Gehuchten's of amputation of the thigh throws much light on the distribution of the centres, especially when considered along with the known origin of the lumbo-sacral plexus. He found in addition to the changes in the post-postero-lateral, and postero-lateral groups, which were manifestly due to the removal of the leg and foot, that Nissl's reaction was present in the central group in L. 5, S. 1 and S. 2, and in his antero-lateral group (which includes my postero-lateral group) in L. 2, L. 3, and L. 4 ; and that, on the other hand, the upper central group in L. 2, L. 3, and L. 4, and the lower antero-lateral in L. 5, S. 1, and S. 2, were intact. I have endeavoured to indicate the positions of the degenerated and the normal groups of cells in Fig. 4, D.

These affected groups of cells, which show Nissl's reaction, must obviously form the nuclei of origin of the muscles of the thigh, which have been removed by the operation, namely, the hamstrings, the extensors of the knee, the adductors and sartorius. The hamstrings, as we know, are innervated by the great sciatic nerve, which again is formed by roots derived from L. 5, S. 1, S. 2 and S. 3. These, with the exception of the last, are the very segments in which the central group of cells shows the Nissl reaction. The inference seems obvious that this part of the central group must contain the nuclei of origin of the hamstring muscles.

The remaining muscles, namely, the adductors, quadriceps, sartorius, and tensor fasciæ femoris, must, if the above reasoning hold good, arise from the upper part of the antero-lateral group (using the term in Van Gehuchten's sense).

There is no direct evidence as yet to show whether the quadriceps lies in front of, or behind, the adductor group, although the remarkable leash of sensory fibres which passes at the level of L. 3 and L. 4, directly forwards towards the antero-lateral group of cells, and which is supposed, with much reason, to be part of the nervous arc involved in the knee-jerk, would seem to indicate that this antero-lateral group was the centre for the quadriceps. In this case the adductor centre would lie in the postero-lateral group. But for the determination of these points further evidence must be obtained.

If we turn now to the muscles which have not been removed, and to the centres which have been left intact, we find

that the former consist of the psoas-iliacus and pectineus, the external rotators of the hips, namely the gluteus maximus, obturator internus, gemelli, pyriformis, and quadratus femoris, in addition to the gluteus medius and minimus and the obturator externus.

My positive conclusions with regard to the psoas-iliacus, supported by the anatomical evidence as to its roots, show that its centres must lie in the second and third lumbar segments in the antero-lateral and postero-lateral groups of cells, and that consequently the view of Van Gehuchten, which places them in the lower antero-lateral column from L. 3 to S. 5, with which segments their nerve-roots are in no way connected, is erroneous. My second case has also proved that the centres for the obturator internus, pyriformis, and probably gemelli, are situated in the anterior portion of the antero-lateral group in S. 1 and S. 2, a fact which is in direct harmony with the established origin of their nerve roots. It may be considered as reasonably probable therefore that the gluteus maximus also, which is itself an external rotator and which derives the main portion of its roots from L. 5, S. 1 and S. 2 has its centre in the remaining portion of the antero-lateral group at these levels. In my case, the gluteus maximus was certainly removed, and this portion of the nucleus had undergone the Nissl's reaction. In Van Gehuchten's case, the gluteus maximus was certainly spared as well as the whole of the external rotators. In it the whole of the lower antero-lateral groups was intact. The upper central group including L. 2, L. 3 and L. 4 remains therefore for the gluteus medius and minimus and obturator externus. With regard to the last mentioned, the obturator externus, this localisation is in exact conformity with the known origin of its roots. With regard to the two remaining glutei, however, the roots assigned to these are stated to arise from L. 4, L. 5 and S. 1, which, if correct, would require their centres to be placed rather in the lower antero-lateral than in the upper central group.

Turning now to the mesial group of cells in the third and fourth sacral segments, we found that it was partly, but not entirely, degenerated. The degeneration was evidently related to the interference with the pudic nerve, and is an indication that the centres for the striped muscles which this nerve supplies

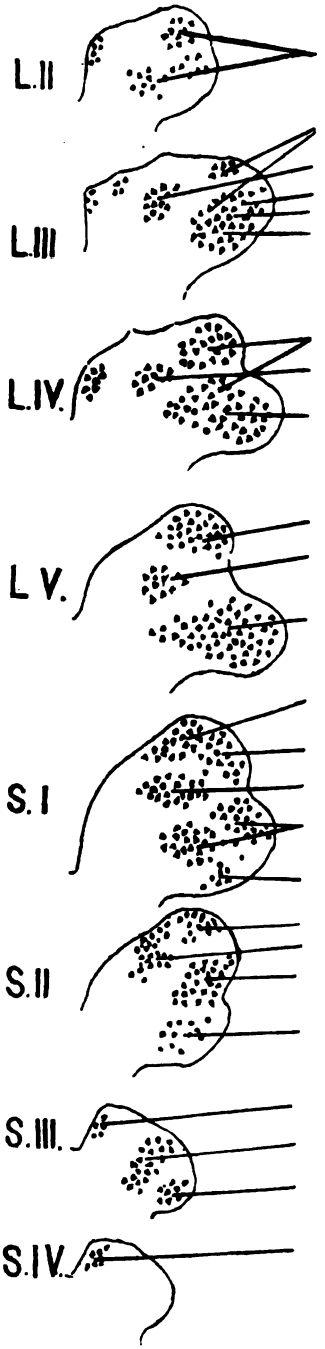


FIG. 5.

psoas-iliacus and pectineus.

psoas-iliacus and pectineus.
obturator externus.
gluteus medius and minimus.
sartorius.
quadriceps (?).
adductors.

quadriceps (?).
obturator externus.
gluteus medius and minimus.
adductors.

external rotators of hip (gluteus medius and minimus).
hamstrings.
calf muscles and extrinsic muscles of foot.

gluteus medius and minimus.
external rotators of hip.
hamstrings.
calf muscles and extrinsic muscles of foot.
intrinsic muscles of foot.

external rotators of hip.
hamstrings.
calf muscles and extrinsic muscles of foot.
intrinsic muscles of foot.

muscles of bladder and urethra.
extrinsic muscles of foot.
intrinsic muscles of foot.

levator and sphincter ani.

are situated in this group of cells. The escape of some of the cells may be due to the fact that the posterior parts of the levator and sphincter ani are supplied by nerves arising from the fourth sacral segment independently of the pudic nerve; but I am not in a position to state definitely that the pudic nerve was entirely destroyed in the operation, and therefore cannot affirm that the normal condition of these mesial cells may not have been due to the escape of some of the fibres of the pudic nerve.

Van Gehuchten has placed the centres for the perinæum in the mesial group (its antero-external division) in L. 3 and L. 4, and that for the levator ani in the upper central group opposite the third and fourth lumbar; a view which is not supported anatomically otherwise, and is based upon what I believe to be the erroneous view of Kaiser and Sano, that the mesial group is destined only for the supply of muscles in relation to the neural tube.

It ought also to be mentioned that not a single degenerated cell was found on the opposite half of the affected cord, every section having been carefully scrutinised to determine this point.

In the accompanying diagram (Fig. 5), I have endeavoured to show the relation of the various centres to the muscles of the lower extremity, in so far as has been definitely ascertained or may reasonably be considered probable. In several respects it must be admitted that the confirmation of future observations is still required.

In comparing this localisation with that obtained by Ferrier on experimental grounds, and by Thorburn and Kocher from the examination and comparison of clinical cases, it will be seen that the correspondence of my results with those of Ferrier is remarkably close, the only essential difference being that Ferrier finds no motor centre in the third sacral segment, and in the second one only, for the intrinsic muscles of the foot; while my scheme, which is in agreement with most of Van Gehuchten's results, shows centres for the leg and foot in the third sacral as well as in the second, in the latter of which there appears to be also a centre for the hamstrings. A table showing the various schemes referred to is appended for the sake of comparison.

	KOCHER	THORBURN	FERRIER	BRUCE
L. I.	—	—	—	—
II.	—	—	—	Psoas-iliacus
III.	Psoas-iliacus (pectineus) Sartorius Adductors — —	Psoas-iliacus Sartorius Adductors — —	Psoas-iliacus Sartorius Adductors Extensor cruris —	Psoas-iliacus Sartorius Adductors Extensor cruris Obturator externus
IV.	Extensor cruris (Gracilis) — Glut. med. and min. (Tens. fasc. fem.) Obt. ext. ? — —	Extensor cruris — Abductors of thigh — Extensors of hip —	Extensor cruris Adductors — — — Peroneus longus	Extensor cruris Adductors Glut. med. and min. — — —
V.	Hamstrings — — Tensor fasc. fem. Glut. med. and min.	Hamstrings — — — —	Hamstrings External rotators of hip {Leg muscles {Long flexors and extensors of toes Peronei —	Hamstrings External rotators of hip {Calf muscles {Extrinsic foot muscles — —
S. I.	— — — {Long extensors of foot and toes {Peroneus brev. and long. External rotators of hip (pyriformis) Glut. max.	— — Calf muscles Peronei — — —	Hamstrings — {Calf muscles {Flex. long hallucis — Intrinsic foot muscles — —	Hamstrings External rotators of hip {Calf muscles {Extrinsic foot muscles — Intrinsic foot muscles — —
II.	— — Calf muscles Long flexors of foot and toes Intrinsic muscles of foot	— — Extensors of ankle — Intrinsic muscles of foot	— — — — Intrinsic muscles of foot	Hamstrings External rotators of hip Calf muscles Extrinsic muscles of foot Intrinsic muscles of foot
III.	— —	— —	— —	{Calf muscles {Extrinsic muscles of foot Intrinsic muscles of foot
IV.	—	—	—	—
V.	—	—	—	—

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VALEDICTORY ADDRESS

Delivered at the Medico-Chirurgical Society of Edinburgh on 6th November

By THE RETIRING PRESIDENT,

A. G. MILLER, F.R.C.S.Ed.,

Consulting Surgeon, Royal Infirmary, Edinburgh

GENTLEMEN,—Following the usual custom, I have the honour, as your retiring President, to address you this evening.

The feeling uppermost in my mind is one of gratitude to the Society for having honoured me by placing me in this chair.

The past two sessions have been most prosperous and successful. This has been mostly due to the wise guidance of our affairs by the Council, to the able and zealous labours of the two Secretaries, and to the spirit infused into our work by the Treasurer.

It is said that the man who fishes every day, and in all weathers, is the most successful, as well as experienced (and therefore expert) fisherman. The same sort of thing may be said of attendance at the meetings of such a society as this. From my position—which is one that has many advantages—I can confidently say to members that regular attendance is most profitable, whether the subjects under discussion are specially attractive or not.

There is something worth while to be picked up at every meeting. It may be at the beginning, or the middle, or the end of a meeting, and it may therefore be missed by the man

who only looks in casually, just as the casual fisher may miss the very hour in the day when the "take is on."

This leads me to say that our meetings have been attended, during the past two years, somewhat better than they were before. There have doubtless been several causes for this. One has been the excellence of the papers and the importance of the subjects selected by the Council for discussion. Another cause has perhaps been the refreshment provided for the early birds of the members, for which we are indebted to the sagacity of our Treasurer.

I have the satisfaction of reporting that our membership has increased considerably, the number of our ordinary members being 450. Last year no less than thirty-nine new members joined, the largest number during the last ten years.

I am very sorry to have to record a very long death list, one hon. member, Sir James Paget, Bart., two foreign corresponding members, Professor Max von Pettenkofer, of Munich, and Professor Ollier, of Lyons.

Of our ordinary members no less than twelve have left us, the venerable and respected Sir Douglas Maclagan, Dr W. H. Lowe, of Wimbledon, His Excellency Dr Robert H. Gunning, and Sir W. O. Priestly, M.P.

Dr John Henderson, of Leith, and Dr William Husband, our oldest members, have died quite recently. They did not attend our meetings of recent years, but they continued to take an interest in the Society to the last. Much the same might be said of Deputy-Surgeon-General Fleming.

The sad death of Professor A. W. Hughes, of London, after his return from South Africa, is not forgotten by any of us. He gave his life for his country, and no man can die more nobly.

During the last few days Dr Connel, of Peebles, has passed away from among us—a man who lived an active and useful life, and who will be greatly missed by both his patients and his friends.

Of Dr George Elder I must say a word. His kindly, cheerful, and active personality made him a pleasant member of our Society, and his ability and capability for hard and good work makes his loss deeply felt. His life was full of promise, and was cut short all too suddenly.

Quite recently we have lost from our midst a well-known

face. Dr Foulis was a very regular attender of our meetings, and contributed many interesting and valuable papers. He was also a good debater, and always added zest to the discussions in which he took part. He was a hard worker and devoted student of science.

Last but not least, there rises up before me the memory of a fine, manly presence, one who attracted attention and who always had something to say that was worth hearing. To my mind, no one could demonstrate a case, bringing out the salient points, and, without wearisome detail, painting the patient in bold and easily recognised outline, like Sir Thomas Grainger Stewart. I am sure that I express the sentiment of this Society when I say that we miss Sir Thomas from our midst, and respect his memory as a great clinical teacher, and one who did much to make the meetings here both valuable and interesting.

We are to have the Treasurer's report before us to-night. All I need to say, therefore, regarding our financial position is that we are prospering. I have also the pleasure of reporting that, under the able management of the Editor, our Transactions are flourishing.

A motion by our treasurer will be brought before the Society this evening, proposing that we should hold clinical meetings in the Royal Infirmary and Sick Children's Hospital. The Council hopes that this proposal will meet with the support of the members, and that their action in securing beforehand the consent of the managers will be approved.

I have now to say something regarding the work of the past two sessions. Ninety patients were brought before us. Of these 56 were medical, and of these again about a half were suffering from nervous diseases. Thirty-four cases were surgical, and of these about a half were abdominal. I need not enter into detail. The statistical facts stated are noteworthy, and indicate where the interest of the profession seems to lie at present.

Of *pathological specimens* we have had a large number. Eighteen were brain specimens and 7 were abdominal (altogether about 70 specimens were shown).

Several instruments and apparatuses were demonstrated to the Society.

Three meetings were entirely clinical.

Of *Papers* and *Discussions* we have had 29. Ten papers and discussions were on surgical subjects, 10 were medical, 3 were on insanity, and the remainder on a variety of subjects.

Five evenings were entirely devoted to the consideration of a single subject.

I shall now select a few papers for brief remarks.

In January 1900 Dr Charles Begg read a paper on the "Treatment of Smallpox by Salol." It was short, practical, and mostly clinical. Just the kind of paper we like to have. His results were remarkable and most satisfactory.

In March 1900 we had a most interesting discussion on "Heredity," introduced by Professor Hamilton, of Aberdeen. Though there was not much new light thrown on the subject, the speeches were most interesting, vigorous, and apparently convincing. Facts were brought forward by the debaters on both sides that seemed unanswerable. But at the conclusion each speaker seemed to be "of the same opinion still." The conclusion, according to some, was too quickly arrived at. This, however, was atoned for by the Editor of the *Scottish Medical and Surgical Journal* kindly printing several speeches that were undelivered.

In June 1900 Dr Foulis, whose recent death we all deplore, gave us an eloquent and lucid demonstration of his views regarding the origin, development, and structure of the umbilical cord.

Two evenings were devoted to South Africa. Professor Chiene gave us a most interesting account of his experiences, and Dr Francis Boyd communicated a paper on the work done by the Edinburgh Hospital.

In February 1901 we were favoured with a paper on "Gastric Hæmorrhage and its Surgical Treatment," by Mr Mayo Robson, of Leeds. The paper was clear and practical. The writer pointed out the importance of diagnosis, especially in regard to defining the position of the ulcer. He also enforced the necessity for the surgeon seeing the case early, and not being sent for at the last moment—an early operation being essential.

A most interesting and practical discussion followed, during which Dr James contributed his experience in regard to

50 cases that had occurred in his wards, in 46 of which there had been hæmatemesis, with no death. Dr Byrom Bramwell also stated that he had had no deaths.

In March 1901 Dr Edwin Bramwell read a most valuable and interesting paper on "Myasthenia Gravis."

In May Dr William Russell expounded his views regarding Arterial Hypertonus, with a lantern demonstration of preparations and pulse tracings. He drew a distinction between atheroma and arterio-sclerosis, disputing and controverting Thoma's views.

At the next meeting we had two remarkable papers from Drs Lewis C. Bruce and Ford Robertson on "General Paralysis." In the discussion which followed, most of the speakers seemed to consider that these papers established a new departure, and overturned the old accepted doctrines regarding the pathology of this disease, the writers holding that the disease is of toxic origin, and is vascular rather than nervous in regard to its pathology.

The last meeting was held in July 1901, when a paper was read by Professor Woodhead, of Cambridge, on "Alcohol," which was followed by a long and interesting discussion.

I shall not attempt to give an account of this discussion. It has been fully reported—especially in the *Scottish Medical and Surgical Journal*—and will appear in our Transactions, where any member may study the speeches for himself.[1]

I should like, however, before closing this address, to give the Society the impressions which the debate produced on my mind.

It was evident that the speakers were divided into two camps, and they seemed to me not to fully understand one another. On the one side there was a tendency to speak of the evil results of alcohol as if they were always due to large doses, to confuse social consumption with medicinal administration, and moderation with excess. On the other side there was a tendency to forget that frequent small doses may be even more harmful than large ones, and that single small doses, which are supposed to be harmless, are practically never administered or taken.

[1] The most complete report of Prof. Woodhead's paper is in the *British Medical Temperance Review* for October 1901.

The subject is a very far-reaching one, and of immense importance medically, socially, morally, and religiously. I shall not attempt to grapple with it, but will conclude by stating briefly my own views as to the duties of medical men in the matter.

What, in my opinion, is wanted, in the present day, is the education of the people in regard to the danger of alcoholic indulgence.

It is not sufficiently understood that alcohol causes fatty and fibrous degeneration, not only of the liver, but of other organs also. That it injures the blood-vessels and the heart, but especially the nerve centres. That it produces degenerations transmissible to offspring, and that it shortens life as shown by insurance statistics.

I am sure that we all know of persons who have materially shortened their lives by habitually taking alcoholics in quantities which may never have produced any marked evidence of intoxication. We also know that many pathological changes, in the vascular and nervous systems, that were previously considered and called "senile," are distinctly and admittedly due to alcohol.

The evils of drunkenness are well known, and we do not need to draw special attention to them; but it is not so generally understood that comparatively small quantities of alcoholic beverages, frequently taken, may be quite as injurious to the tissues. In other words, that *frequency* is as dangerous as *quantity* from the pathological point of view.

Some people will continue, I am afraid, to misuse alcoholic beverages whatever we say. But is it not our duty at least to warn them of the danger which they incur?

INTRODUCTORY CLINICAL LECTURE

Delivered at the Royal Infirmary, Edinburgh

By C. W. MACGILLIVRAY, M.D., F.R.C.S.Ed.,
Surgeon to the Royal Infirmary, Edinburgh

ON Monday next I propose commencing the exhibition of patients; for to-day I think that a part of what remains of the hour may be profitably employed in considering the changes that have taken place in the teaching and practice of clinical

surgery, since the days when I was a student. When I first commenced the study of clinical surgery in 1869, bedside teaching, as it is now understood, was practically non-existent; the surgeons visited their wards, and pointed out the more interesting cases, and occasionally indicated the lines of treatment which they had adopted, and what the probable results would be, but systematic teaching and training of the students as to how they were to examine and diagnose cases, and why certain lines of treatment were to be adopted, were conspicuous by their absence.

Clinical lectures were more of the nature of classical dissertations, and demonstrations of interesting cases, which, while they impressed the students with the vast knowledge and marvellous capabilities of their teachers, did little to assist them in the acquisition of similar powers, or of putting into practice the theoretical knowledge they happened to possess. This no doubt had an excellent and stimulating effect upon the best class of students, but in the case of the ordinary rank and file, was apt to lead to a sense of hopelessness, and a feeling that only perchance, in the far-off future, was it possible that the divine afflatus might descend on them, and that by a species of inspiration they also might be granted similar magical powers of certainty and infallibility.

The idol was no doubt occasionally shaken on its pedestal, when a supposed fatty tumour turned out to be a chronic abscess, or the surgeon had forgotten to bring a calculus in his pocket when he was going to operate for stone, but such details did but little to detract from the infallible omniscience of the great men of the past.

At the time I speak of, while the introduction of chloroform, some twenty years previously, had done much to revolutionise surgery, antiseptic surgery was still in its infancy. Lister had just come from Glasgow to succeed Syme, and while he had got firm hold of the right end of the stick, as regards the bacterial origin of so many surgical diseases, he was still groping in the quagmires of carbolic putty and antiseptic plaster as regards treatment, the cleaner but delusive pathways of antiseptic gauze and carbolic sprays not having yet been attained to; with the principal, however, of antiseptic cleanliness firmly established, rapid strides as regards success-

ful results soon took place. While, previous to this, primary union of wounds was the rare exception to be chronicled and wondered at, now healing by first intention gradually became the rule. Compound fractures, which formerly so often meant amputation or not infrequently death, now, as frequently, healed with but little trouble. While pyæmia, spreading hospital gangrene, and phagedena, which had at regular intervals decimated the wards, now fled abashed before the magic wand of antiseptic surgery.

Chloroform had already done much to widen the sphere of operative surgery; before its discovery rapidity and dexterity were the desiderata aimed at by the successful surgeon, but even with its aid operations in those days were, in comparison with what now prevails, few and far between. You will scarcely believe it, but practically all operations were performed in one large theatre, one surgeon operating after another in the presence of all the other surgeons, who sat round and criticised their colleagues' performances. It was no doubt most instructive and amusing at times, and one would time the different operations as if at a boat race, and discuss how A was off colour to-day, or B had surpassed himself. Amputation at the hip would be discussed for days beforehand, and would bring the whole medical world of Edinburgh together to look on; and even an excision of the upper jaw would be followed with breathless excitement.

With the firm establishment of antiseptic surgery regions formerly undreamt of now opened like an oyster to the surgeon's knife, and what formerly would have been considered unjustifiable or even criminal rashness, now gradually became the everyday and commonplace. Nowadays each surgeon has his own operating theatre, and the poor student has such an "embarrass des richesses" that the difficulty is not to see enough operations, but to choose whose performance he will honour with his presence.

Take, for example, the abdominal cavity; for the ordinary hospital surgeon operations were, at the time of which I speak, practically limited to the one for strangulated hernia, and even then the sac, when possible, was left unopened, so as not to expose to the unhealthy air that dread and fatal membrane, the peritoneum. A few adventurous spirits, such as Keith,

Spencer Wells, and Heron Watson, had no doubt begun to remove ovarian tumours with varying success, but their efforts were discussed by the crowd with much shaking of heads, and doubt and misgiving as to the wisdom of such foolhardy rashness, and when Heron Watson finally removed an ovarian tumour in the public operating theatre, it was gravely discussed as to whether such a tempting of Providence should not be formally censured and forbidden by the Infirmary management, the mere fact of the patient recovering not being a sufficient answer to all objectors.

Now, as you know, the abdominal cavity is, one might say, open free to the public, and there is not a single organ therein that has not been subjected to surgical interference; livers are sewn up; stomachs and gall bladders are removed, or opened up and investigated, and sewn up again; the spleen, kidney or long portions of bowel are removed with success, their absence apparently making very little difference as regards the patient's well-being; while even conditions so serious as internal obstruction, perforations, appendicitis and gall stones, which formerly would have been left to the care of Providence, with singularly unsuccessful results, are now at once the subject of surgical interference, and generally of cure.

For long the remark of the London consulting physician, "That he daily thanked God for the diaphragm," was fully justified, but even that barrier has now been overpassed, and though the surgical treatment of the contents of the chest is still somewhat in its infancy, except as regards the pleural cavity, portions of lungs have been excised, and abscesses opened and drained, and even the heart and its coverings have been successfully operated on.

Until lately the central nervous system remained as a *noli me tangere* of surgery, except, indeed, as regards its bony coverings, which, curiously enough, had for centuries been regarded a suitable field for surgical interference. We read how in Holland, two or three centuries ago, a noble Spanish Don fell from his horse, and was picked up insensible; a dashing surgeon went at once to the rescue, and though apparently he did not condescend to such an unnecessary detail as a diagnosis, promptly trephined him; finding nothing to account for the condition, and no improvement taking place, he did it

again, yea, even unto fourteen times (the top of the Don's head must by this time have looked like the rose of a watering pot), no apparent result ensuing he desisted, and the most extraordinary part of the whole affair was that the patient recovered. In these days, with greater knowledge and skill, abscesses are located and tumours are removed from the brain itself, the only humiliating point being that the frontal lobes, which are supposed to control and direct the higher functions of mind and thought are those which will bear most interference, and can be removed in tablespoonfuls without producing any appreciable difference in the mental or other nobler functions of the individual. Whether, indeed, this depends upon our latent intellectual capabilities being so enormous that we can dispense with a portion with impunity, or upon the fact that they are so debased that the loss of a small quantity is rather an advantage than otherwise, I leave to your individual choice.

But, gentlemen, the modern methods of systematic clinical teaching, of innumerable out-patient cliniques, of senior and junior cliniques, practical classes, etc., etc., have their disadvantages as well as their advantages. Let me name them. In your systematic classes it is quite right that you should listen with awestruck attention to the floods of wisdom which flow so easily from the lips of your teachers, and that you should note down carefully the facts that are placed before you, and that you should read, mark, learn and inwardly digest them, but I warn you you will never become an adept in clinical surgery by these methods alone. The student of my day had to forage for himself, like the British soldier on the South African veldt, no prepared food or regular meals being provided for him. He had to beg, borrow or steal any crust wherever he could find it. This developed in him perseverance, self-reliance and ceaseless industry, and what he did assimilate with so much pains, he did thoroughly and never forgot it.

The modern student, on the other hand, is only too apt to turn up his nose at all instruction that is not carefully prepared for his easy absorption. It must be boiled down, peptonized, and put in a feeding bottle, and even then he feels hurt, unless the teat is put into his mouth by his teacher.

That is an error, gentlemen, that I would warn you not to fall

into. I cannot make you all surgeons, I can only strive to point out to you the way in which you can yourselves work to that end. It is only by personal observation, examination, and study of cases, that you can attain to any certainty and perfection. Theories as to causes, pathology and treatment, may change, but the facts present and to be observed remain the same, and what you have to learn is to see them aright (in fact, the difficulty sometimes is, to get you to see them at all), and having seen them, to be able to make deductions therefrom. Remember, therefore, that the matter rests with yourselves. I, as your guide, can point out to you the path that you should follow, and even go with you, but if you follow it with your eyes closed, and expect to learn very much from my descriptions of the scenery, you are certain to be disappointed in the result.

Another point I would impress upon you is, that clinical surgery is not a subject that you can master by cramming; that is a bad principle to follow at any time, but unfortunately it can be done in many subjects, if the object in view is simply the passing of an examination. Fourteen hours a day hard reading for a month, with the burning of an excessive amount of midnight oil, and a wet towel tied round your head, will no doubt carry you through most of your examinations, while a week's rest will almost certainly rid you of the crude undigested information which you have unhealthily absorbed, and leave your mind a perfect blank. Fortunately this you cannot do with clinical surgery; you must be content to absorb slowly and gradually, here a little, and there a little, to come upon waiting nights, and (as you are apt to think at the time) waste many valuable hours, with cut heads and crushed fingers, which might have been more profitably employed in learning by rote the direction of the fibres in the spinal cord, but at the end of six months you will be surprised to awake to the fact that you really do know something of practical surgery, though you might find it difficult to say how you acquired the knowledge.

I would have you bring then to this great subject of clinical surgery those qualities—personal observation, untiring patience and perseverance, as well as ceaseless industry; and if I, as your teacher, can in any way, and at any time, help you along this toilsome road, you may be sure that it will ever be my pleasure to do all I can to assist you.

Special Articles

REORGANISATION OF THE ARMY MEDICAL SERVICE

THE Army Medical Department has frequently been the subject of Royal Commissions—changes have been made—Royal Warrants have been promulgated, and yet by those within its circle, grievances have constantly been aired, and fresh reforms sought for. Substantive rank was granted, and the department was honoured by being made a Royal Corps, and yet grievances seemed as rampant as ever. Hydra-headed, no sooner was one grievance done away with than another said to be more urgently requiring remedy arose, and it seemed as if nothing that was done could give the members of the corps satisfaction. When war broke out in South Africa, in spite of undermanning of the department, at first everything went smoothly, and eminent surgeons after some months' experience on the spot said the brightest feature in the conduct of the war was the extraordinary completeness and success of the medical arrangements. Everyone was satisfied that the medical treatment of the sick and wounded was all that could be desired, when suddenly a series of blood-curdling letters appeared in the *Times*, written and signed by a Member of Parliament. Tales of gross mismanagement, inefficiency of the officers, and cruel unnecessary hardships to the sick and wounded were related. The government was roused to action—a Royal Commission was appointed to enquire, on the spot, whether the horrors described were true or false. The report of this Commission is still too recent for anyone to have forgotten that the most categorical of the charges were proved to be inaccurate and that the accusations of Mr Burdett Coutts were one and all shown to be exaggerated or mistaken. To bring the accusations before the public at the time and in the way it was done, was not only a great injustice to the officers and men of the R.A.M.C., but a cruel injury to the relatives and friends of our soldiers in South Africa, as the thought that what was said *might* be true intensified their anxiety. To estimate the anxiety and pain thus caused to thousands in this country is quite impossible, but the knowledge of it might even touch the sensibilities of the most pachydermatous. Unwittingly, however, the author of these accusations regarding the R.A.M.C. may have benefited the corps he so bitterly attacked, as public opinion having been aroused, special attention was directed

to the reform of the medical department, and culminated in the appointment of a Committee, the members of which were selected and presided over by the Secretary of State for War. The composition of the committee and the absence of evidence submitted to it from members of the medical profession, whether military or civil, have been questioned, but the report issued by it must be recognised to be an earnest endeavour to put the medical department on a sound and satisfactory basis.

It is natural that the medical profession should look at it from the standpoint — Will it establish the corps on a satisfactory footing to do its work, and strengthen the position of the medical officer. The grievances more particularly complained of by the medical officer within the last few years have been—

(1) Undermanning of the service.
(2) Want of leave—due chiefly to the undermanning.
(3) Too little pay.
(4) Too much routine clerical work.

An endeavour has been made to do away with these, but whether the suggestions will succeed in their main object or not depends entirely, I believe, upon one point—viz., Under the new regime can teachers in the Universities and Corporations advise young medical men to adopt the R.A.M.C. for their future work; has the service been made so attractive that it will induce men to enter it? Upon an affirmative answer to this the success of the scheme depends. For several years there has been a dearth of candidates. The service has had a bad name, be the cause what it may, and young graduates have refrained from entering it.

Now grant that the scheme be sanctioned. Is it sufficiently good to make the best men enter the service. Upon what have they to rely that they will advance in their rank and do good service to their country. Examinations are not done away with, and to these I will refer presently; but of the first importance is the knowledge of the authority to whom they will be responsible. I believe the *advisory board* to be a good thing. The presence of civilians, if properly chosen men, is bound to have a salutary influence. If young graduates know that their future will be to some extent in the hands of respected and trusted teachers who are familiar with their ambitions and anxious to promote their interests, they will be much more ready to go into the R.A.M.C. than if they believe that they are merely to depend upon red tape regulations automatically applied. But even more important than this for the good of the corps, in the widest sense, is the later decision that the Director-General is to be a

member of the War Board, and to be, in effect, paramount in medical and sanitary questions. This increases his responsibilities; but if he be a man worthy of his office and capable of maintaining his proper position, the very fact that he holds a high position and can appeal direct to the Secretary of State for War should be a guarantee that in the future the medical department is thoroughly efficient, and that its officers occupy the position they should. After all it comes to this, the men make the position. If below standard their position can never be satisfactory—they make it. If the right men enter the service—men of education, culture, ability, and men who will give their life to their work—the future of the R.A.M.C. is safe.

It is only right that there should be a means of determining how a man is doing his work, and whether he be competent and suitable for advance in the service, and this can only be done at first by some form of examination. The committee have wisely decided that the examinations are to be mainly practical, and that promotion is to be hastened by a good pass, which is equivalent to a proof that a man has been working, not wasting time. Examinations, however, can be overdone, and all must recognise that the older a man is, the less favourably does he take to examinations, and the more irksome does he find them. To examine a man above a certain age is also trying for the examiner, however experienced he may be. If it be still necessary to put men through the ordeal of examination when they are nearly forty years of age, I think it shows that they have not had opportunities to show their superiors the class of work they have been doing, or their superiors are unfit to judge of men's work when it comes under their cognisance. Who are to be the examiners? If men by the time they are five and thirty years of age (the age of a major) are fit for advancement, they are most likely better able to be the examiners than the older men who will probably be appointed to examine them. I believe if the teachers in the profession had been asked regarding examinations they would have advised against them after the examination for the rank of captain. Everyone who has had experience in examining knows how frequently a really good man fails to do himself justice and how often other men of much less ability succeed in doing more than justice to their mental powers. Sir Frederick Treves in a letter says, "No man competent to undertake the duties of the higher rank could object to the examination. The incompetent man naturally would object to it." This is in regard to the examination for promotion to the rank of lieutenant-colonel. I agree much more with the views expressed by Dr Clifford Allbutt in a letter to the *Times*. A

man who fails to gain a high percentage of marks may, by his general professional knowledge, his tact and ability to deal with men, be much more capable for a post of responsibility than a man who has a power of passing examinations well. The former, by this scheme, is to suffer the latter to gain promotion. But the examination question has a much more serious effect upon a man's future. Suppose he reaches his majority "he shall have another examination before he has completed 20 years' service, and if he fail to pass this he will either be compulsorily retired with a gratuity of £2500, or be allowed to complete 20 years' service and retire on a pension." But even if he do pass, all promotion is by selection, and if he be so unfortunate as not to be selected for promotion as lieutenant-colonel "at the end of *one* year after the completion of 20 years' actual service he will be permitted to remain on the pay of a major until he completes 25 years' service, subject to acceleration, when he will be compulsorily retired on the pension of his rank."

The crux of the whole of this portion of the scheme then is this, that by examinations up to the rank of major, a man may be promoted and have promotion accelerated by a good pass, but failure means compulsory retiral. To gain good results in examinations has two benefits, promotion, and it may be leaps in seniority, but against this has to be placed the bare pass which means relatively slow promotion, and the risk of failure which means compulsory retiral. And worst of all after 20 years' service there may be compulsory retiral with a gratuity of £2500, but no pension. Hitherto I think one attractive feature in the R.A.M.C. to many men has been a pension after 20 years' service—this apart from anything else being a certainty. Now the certainty is done away with, and from the time of entrance into the service until the examination for lieutenant-colonel has been passed there is a risk that examination may throw a man out minus his pension. The scale of pay has been very much on the assumption that the certainty of a pension compensated for its smallness—now little increase in pay is given, and the pension may never be got. All this part of the scheme seems to me as bad as possible, and will make many men very chary of risking their future in the R.A.M.C. From another aspect the examination system at the later periods is bad. The majority of men only begin real personal work when they are done with examinations, and free to strike out into congenial paths of work. In this way specialism gains the best men—men who have a special aptitude for a particular branch of work, but if examinations still loom ahead, with the possibility of failure, and its dread results, the man whose mind is working in a

different groove from the subjects of examination cannot be expected to do good work. In such circumstances examinations are weights handicapping a man and preventing him from advancing beyond routine duty and the inexorable laws of red tape.

The high position which the Director-General now has—the fact that an Advisory Board is to have civilians upon it, are in themselves very strong inducements to young practitioners to join the R.A.M.C. The fact that men from the R.A.M.C. are to hold appointments in special departments of medicine, and that study leave is to be given, so that men keen in their work may be able to keep abreast of medical and surgical progress will do much to stimulate officers to work at their profession. The arrangement suggested to prevent men who are appointed to junior hospital positions from losing seniority is excellent, and removes a barrier which has formerly deterred good men from entering the service. These are all good points in the proposed reform, but I believe over-examining will interfere greatly with the success of the scheme. How many men will give up the service at the end of nine years, thus avoiding other examinations, and retire into civil life with a gratuity of £1000, in many instances a larger sum than they could expect to save during work as assistants or from practice. It is unfortunate that an endeavour has not been made to secure the services of such men during a time of war if the exigences of the service necessitate it. Why should men who have resigned at the end of nine years not be obliged to serve on active service if required to do so at any time during a period of ten years? The proposal that after three years men may go on the Reserve and have £25 a year for seven years is not enough.

Postscriptum.—Since the above was written the Advisory Board has been constituted, so far as men from the R.A.M.C. and civilians are concerned. It is interesting to note that the Director-General, the Sanitary Expert, and the Expert on Tropical Diseases are all graduates of Scottish Universities. The Assistant Director-General is an Irish graduate. Of the civilians, one is an Irish graduate, one a Scotch graduate, said to be the representative for Scotland, but practising in London. Three are London men—two of them unknown as teachers or investigators.

These facts speak for themselves, and require no comment.

DAVID WALLACE.

THE CARNEGIE TRUST

THE following is the report on this Trust, which was submitted to the meeting of the General Council of the University of Edinburgh, held on the 25th of October last. We reproduce it here because of its intrinsic value, and as some of our readers, who are interested in the Trust, may not have had an opportunity of seeing it. The report was drawn up by the combined Business and Finance Committees.

Mr Carnegie's gift of £2,000,000 to the Scottish Universities is an event of overwhelming importance, and it has been made at a most opportune time, when our Universities, as recast by the Act of 1889 and the Commission, are entering upon a new career with great potentialities.

The income of his fund—£100,000 a year, Mr Carnegie divides mainly between two purposes—(A) The increase of teaching power and facilities, and (B) the payment of class fees of Scottish students.

Teachers in the University are of three denominations—Professors, Lecturers, and Assistants. The Lecturer is of recent origin. In some cases he is the head of a department, as in Modern Languages, and is doing the duty in every way of a Professor, but has not the status of a Professor. Being temporarily appointed, he does not become entitled to a pension. His department suffers by his exclusion from the Senatus, where matters of educational policy are considered. In other cases, Lecturers, who are also Professorial Assistants, are appointed in some subject cognate to the Chair, an expedient presumably resorted to by the University Courts on account of lack of funds. These men, primarily Assistants, are at the call of their Professors, and being much engaged in practical work and in the correction of examination papers, have little time to devote to the special subjects on which they lecture. Several Lectureships, such as Insanity, Medical Physics, and Agricultural Chemistry, are held by independent teachers, but have not hitherto been erected into Professorships.

Assistantships are virtually under professorial patronage although the appointments are made by the University Courts. Under this system there have not been that free selection from among the best students and that security of individual tenure which are essential to retain good men on whom an increasing amount of responsible teaching, especially of a practical kind is thrown. An Assistantship is often the first step on the ladder to a University Chair, and the University Court should see that the best students are chosen by merit.

Chairs founded long ago embrace nominally many subjects which, if they are to be followed beyond their elementary stages, cannot profitably be now taught by one man. It is impossible for him to keep himself abreast of the literature of the whole range of his subjects. In Medicine this is a truism, and the converse is almost equally true, that high specialisation makes a teacher more and more unfit to be deemed an authority in general clinical work. Take for example a Chair of Midwifery founded nearly two centuries ago, and embracing the two subjects of obstetrics and gynæcology, now so distinct that the cases of the former are treated in the Maternity Hospital, while those of the latter are relegated to wards in the Royal Infirmary, surely a sign that whenever funds permit, each subject should have a separate Chair. On this principle Public Health has only the other day, by means of the "Bruce and John Usher" foundation, been separated from Medical Jurisprudence in the University of Edinburgh. Another difficulty occurs in some subjects where the cleavage is not so marked, but where the development is great all along the line, such as anatomy and surgery. It may be possible for a Professor to give systematic instruction over the whole subject to ordinary students, but for the purposes of higher study and research by the Professor and the advanced students, there is now great urgency, if not for splitting up the subject, at least for the creation of Junior or Associate Professorships to relieve the pressure and to enable more personal practical instruction to be given to the students.

Again, the requirements of the highest specialisation now call for teachers of almost unique qualifications who can never have many students, but who must be men of national if not of world-wide distinction. The old notion, however proper for ordinary subjects, of the mechanical quadruplication of Chairs in the four Scottish Universities, is not applicable to these specialists. Any such Professorships instituted by the Carnegie Trust might therefore with great advantage be attached to the four Universities in common, by some new arrangement. Many benefits besides the obvious one of economy would accrue from the introduction of community and reciprocity as working ideas into Scottish University life.

Local circumstances may offer an inducement to develop at one University in one department and at another University in another. The arrangements for Hospital instruction, the state of the University and other Libraries in the town, the existence of Bursaries, Scholarships, Fellowships, or other Endowments available for the particular department, and local industries even, might all be determining factors. Here again it may be

needful to emphasise the difference between ordinary graduation and the higher study and research. One of the foremost claims upon the Trustees will be to strengthen the Modern Language departments in each of the Universities. For study towards the higher degree of Doctor of Letters given for independent research, separate instructors in the romance and in the Teutonic languages are obviously necessary. Not only so, but a University department cannot be said to be equipped by the mere creation of a Chair or a Lectureship. Travelling scholarships would be a great incentive and benefit to students.

Research in medicine and science demands a large portion of the immediately available income in the hands of the Carnegie Trustees. The laboratories connected with existing Chairs have been established to meet the wants of the ordinary graduating student; but changes in graduation courses and in methods of laboratory instruction and study have rendered not a few of these inadequate; thus the teaching of physics in the University has been seriously hampered by the want of facilities for practical work. What have been, however, required for long are special research laboratories in which higher students would in the first instance be trained in the methods and apparatus of research. Such students as showed aptitude would be singled out for work specially congenial, to be done, not necessarily within the University walls, but also at stations specially equipped, or other places where the requisite facilities can be best obtained. Each laboratory would require a director with the status of a professor, and probably two or more sub-directors, each taking a special branch of investigation. Bacteriology and pathology would claim prominence in research.

The importance of libraries for all research work is everywhere admitted. Through poverty the University libraries have fallen lamentably behind. To attempt to bring up and keep up the libraries in the whole four Universities to a research standard in every subject would be a very serious, if not an impossible burden, upon the income at the disposal of the Carnegie Trustees; hence the greater reason for the discrimination already suggested in regard to the development of particular departments at each University. Much might also be done to set free the library resources and increase their effectiveness for research study in Edinburgh by the adoption of some general plan of development and reciprocity along with the other great libraries of the Royal Society, the Royal Colleges of Physicians and Surgeons, and the Legal Bodies, and with the Edinburgh Public Library. Mr Carnegie's outstanding position as a founder of libraries is a guarantee that the University

libraries will receive adequate consideration at the hands of the trustees.

A special difficulty affecting the teaching of clinical medicine in Edinburgh University might be removed with a small portion of the funds at the command of the Carnegie trustees. It is a survival from the old time when specialisation was unknown. For clinical instruction of the University medical students there are set apart in the Royal Infirmary several wards, which are under the charge of certain of the medical professors. Owing to the progress of specialisation some of the medical Chairs have withdrawn from this clinical work, and the only Chairs now participating in it are those of medicine proper, materia medica, pathology and midwifery. About £950 of fees are specially divided among the professors in these four subjects for this clinical instruction. In surgery the anomaly is entirely reversed. The Professor of Systematic Surgery, although he has wards in the infirmary for the illustration of his lectures, is not allowed to teach clinically. This has the result of diminishing the opportunities available for qualifying clinical instruction. Since 1803 there has been a separate Chair of Clinical Surgery, devoted solely to clinical teaching. Fresh arrangements for the clinical teaching of medicine and surgery in relation to the University may necessitate an increased charge upon the funds; but the importance of the subject is such that it is worthy of early attention.

The second great purpose of Mr Carnegie's endowment is the payment of the University class fees of Scottish students. Much of the criticism expended upon this branch of the endowment has been displaced by the publication of Mr Carnegie's own words in a letter to the Earl of Elgin, Chairman of the Trust. These made plain that all students otherwise qualified who apply will have their fees paid without inquiry as to their pecuniary circumstances, there being, however, an honourable understanding that only those should apply who need the assistance. The scheme should give a great impetus to education throughout the country. When every child in a secondary school knows that so far as payment of University class fees is concerned Mr Carnegie has removed all difficulty, we may expect that many of the brightest scholars will press forward to enter the Universities. Such a movement will give greater zest and direction to secondary education in the many cases where a University career is now made possible through Mr Carnegie's endowment. Some such stimulus has been needed, as of late the number of University students has tended to decrease. It must be remembered that while the class fees

are but a partial payment of the cost to a University of a student's education, the cost to the student or his parents is greater still, and tends to increase. He has to be maintained and clothed, books and other requisites of study have to be found, and matriculation and graduation examination fees have to be paid. These expenses, which have largely increased, and the greater amount of time and study now necessary for graduation, tend to diminish the attractions of our Universities for many hard-working students, as well as for those who desire a leisurely rather than a scholarly career. The harder work demanded of students makes them also, not unnaturally, more exacting in regard to the teaching staff and arrangements, which the first part of Mr Carnegie's endowment is designed to improve.

The other purposes of Mr Carnegie's great scheme should not pass unnoticed. Extramural colleges and technical institutions doing work on a university level are entitled to participate in its benefits. This may pave the way for the ultimate fusion of these schools, or their affiliation with the universities. The trustees are specially empowered to help meritorious students. Under purpose (C) surplus income may be devoted to the establishment of University Extension Lectures and to the institution of evening classes. Women are placed on equality with men. Lastly, the Trust can renew its vigour from time to time, the trustees, by a two-thirds majority, having power to modify the conditions of the endowment.

The Joint Committees, therefore, under the first head of Mr Carnegie's gift, recommend the General Council to represent to the University Court that the following are clamant needs of the University, namely :—

(1) The development of the work of the University in connection with the teaching of modern languages.
(2) The strengthening of the teaching staff in the medical faculty, so that subjects which have recently become of increased importance should be adequately represented.
(3) The provision of suitably equipped laboratories for the instruction of students in all graduation subjects for which practical work is required.
(4) The establishment of laboratories providing facilities for research in the main lines of scientific work.
(5) The improvement of the library.

CONTEST FOR THE SCOTTISH SEAT ON THE GENERAL MEDICAL COUNCIL

THE following report of a meeting held in Dundee under the auspices of one of the local medical associations has been sent to us. From it our readers will be able to judge of the matters which are expected to determine the voting for the Scottish Representation on the General Medical Council.

There are various topics dealt with which the profession in Scotland might seriously set itself to think about, to discuss, and to determine what position it was to take up with reference to them. This requires more time for consideration than the few weeks before an election allows, and we cannot imagine any better use to put the British Medical Association Branches to than making them the centres of action and then to have combined meetings for larger discussion and the determination of policy. The real opinion of the profession might then be ascertained, and organised action would carry weight whenever it was thought wise to use it. Meanwhile the opinion of the profession in Scotland is unknown, and cannot be reliably ascertained on anything.

A meeting of the Dundee Branch of the British Medical Association was held in University College, Dundee, on Nov. 21st, for the purpose of hearing the three candidates for the representation of Scotland on the General Medical Council. There was a large attendance. In the absence of Dr Alexander Campbell, President of the Branch, the chair was occupied by Dr Charles Templeman, who, in opening the proceedings, remarked that the election was a matter of the greatest importance to every member of the profession who took an intelligent interest in medical politics. It was not intended that that meeting should commit the Branch in any way to any particular line of conduct, or to any particular candidate.

The meeting was made open to all practitioners.

Dr Bruce first addressed the meeting. He said he had the honour of representing the whole of the profession in Scotland for fifteen years. It was natural to say that such an honour should go round, but if the Scottish representative was to feel that he had an insecure seat he was placed at a disadvantage as compared with other representatives. Proceeding to refer to matters of special interest to the profession, he said that one question which had come to the forefront was that of doctors keeping open shops. He had a feeling that the keeping of open shops did lower them in the eyes of the public, but while he did

not approve of the custom, he could not be a party to any endeavour to establish any rule that would prevent what the law allowed, and at present the law did allow doctors to keep open shops and to dispense medicines. One thing, however, which ought not on any account to be permitted was the sale of poisons through the hands of unqualified assistants. With regard to the recognition of midwives, he was of opinion that a certain modified form of licence should be granted to them. Dealing with the question of contract practice, he said it was essentially and fundamentally wrong. Going on to refer to the subject of medical education, he said he would not resile from the position he had taken up, that there should be at least five years' course of medical study. He advocated increased direct representation of Scotland on the General Medical Council. A single representative from Scotland was, to say the least, very unfortunate. There ought to be territorial representation for Scotland, England, and Ireland. The gentlemen at present composing the Council, however, were men of the highest possible intellect, position, and integrity.

Dr Robertson said he was a candidate in consequence of a requisition from his fellow-practitioners in the west of Scotland, a requisition which had its origin in the widespread dissatisfaction among medical men regarding recent proceedings of the General Medical Council. That had reference mainly to the refusal of the Council to receive a deputation from Glasgow and the west of Scotland regarding the question of the sale of scheduled poisons. He did not think that any other body of men in the kingdom would have refused to at least hear their fellows on a subject of such vital interest. Quite independently of his wish to obtain their support, he was glad of that opportunity to enlist their sympathy with a large body of men in the west of Scotland who were living in daily terror of being accused of "infamous conduct" in connection with the sale of poisons. They claimed the same right to sell scheduled poisons as the chemists themselves, and they claimed no more. The custom of keeping open shop in Glasgow and the west of Scotland was both ancient and widespread, and its propriety had never before been questioned. The present crusade by the Pharmaceutical Society had really nothing to do with the public safety. A Society that had the audacity to appear before the General Medical Council with complaints against members of the medical profession ought surely to be able to go there with its own hands clean. Instead of that, the counter prescribing by chemists, which was everywhere prevalent, the wholesale advertising, the exhibition of "cures" for every known disease, and the publication in their trade journals of books for the

treatment of disease were outstanding insults to the whole medical profession, and called loudly for redress.

Dr Walker dealt at considerable length with the question of medical education, and advocated the desirableness of introducing bacteriology into the curriculum. He did not think that examinations should be abolished or even diminished. As to midwives, he should insist upon their having three months' training in a maternity hospital. The idea that there should be no club practice was outside the range of the practical, and the solution of the difficulty was to be found in combination among medical men such as obtained in Dundee. With regard to parochial medical officers and their tenure of office, he held it was entirely wrong that they should be liable to dismissal at the caprice of small Parish Councils without the right of appeal. On the subject of the sale of poisons, he did not think that the Pharmaceutical Society was actuated by a spirit of narrow jealousy, but the medical practitioners in certain parts of Scotland were defying the law. He was prepared to advocate that the sale of drugs, as well as poisons, by doctors' unqualified assistants should be interdicted.

Several questions were put to the candidates, and Dr Robertson, in reply to interrogations regarding the practice of keeping open shop, said it was a custom of such long standing in Glasgow and the west generally that it was practically universal. He by no means acknowledged that there was anything wrong in the practice. It might be undignified—though he saw nothing undignified, and the chemists did not think it undignified. Dr Buist—Does it not encourage Glasgow people when they come to Dundee to expect to get their diseases prescribed for in chemists' shops? Dr Robertson admitted it would be a grand thing for the profession if it were practical to abolish the custom.

Recent Literature

CRITICAL SUMMARIES AND ABSTRACTS

MEDICINE

PLAGUE

By FRANCIS D. BOYD, C.M.G., M.D., F.R.C.P.Ed.,
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THE presence of Plague in Scotland and the importance of the subject at the present moment form a sufficient excuse for a note on the recent literature of the subject. There is no disease at the present day in which an early diagnosis is of more im-

portance to the general community, a fact which is well borne out by the history of the cases in Glasgow in 1900.

Most of the recent literature is, as may be expected, from workers in India where the profession have had so much experience of the disease and its prophylaxis and treatment.

As an etiological factor the occurrence of plague in the lower animals has received considerable attention. Clemow[1] finds that monkeys suffer from the disease, but he concludes that they have little to do with spreading it. This is perhaps not surprising seeing that the monkey cannot be described as exactly a common household pet even in India. Of rodents the most susceptible and universally distributed is the rat. But when we come to the rôle played by the rat in the diffusion of plague we are upon debatable ground. That rats are very susceptible and that the mortality amongst rats is high during an epidemic of plague there can be no doubt. Yet when we examine the report of the Special Plague Medical Officer for Calcutta we find it stated, "rats have practically no concern with plague," and that the "recorded evidence dealing with Bombay Presidency and Calcutta suggests that rats certainly are not the chief disseminators of infection." Yet in the same report Drs Clarke and Pettifer bring forward evidence to show that in their opinion the causal connection between the rat and human plague is plainly marked, and that the virulent outbreak in one locality in Calcutta is explained by the presence of an enormous rat population, and a definite history of rat mortality preceding the outbreak of human plague. If we allow that rats are susceptible, which they certainly are, Simond has suggested that the flea is the intermediary: but here again we are met with a difficulty, for the pulex irritans is a different species from the rat-flea.

In a recent "Treatise on Plague"[2] the authors conclude that the destruction of rats is a "useful paliative measure of purely temporary benefit," and they inveigh with no little rhetoric and strength of language against those who turn their attention to the destruction of rats at the expense of more useful measures. Professor Simpson, in his lecture at Cape Town, is very guarded in his treatment of the rat question; but he points out that for a considerable period (five months) antecedent to the occurrence of the first case of plague, sickness of the nature of plague was noticed amongst the rats in the dock sheds in the South Arm, where the forage was landed from the infected ports of Rosario, Argentina, and Bombay. While then we must conclude that

[1] *British Medical Journal*, May 1900.

[2] "A Treatise on Plague." By Major George S. Thomson and Dr John Thomson. London. 1901.

rats undoubtedly suffer from plague, we do not yet know the exact relation between rat plague and human plague; but there can be no doubt that, given the element of doubt, most careful attention must always be given to the rat, even though he may turn out to be an innocent victim of man's imperfect knowledge.

While on the question of the rat, it is interesting to note the work of Caldas.[1] He advances the view that the Bacillus Coli of the rat and the Bacillus of Yersin are identical, basing his conclusions on experimental observations. A rat was taken and the rectum occluded by suturing. After eight days the animal died. *Post-mortem* peritoneal exudation was found which gave B. coli in pure culture. The cultures thus obtained were intensified in virulence by passing them through a series of rats, till a high degree of virulence was obtained. With these cultures immunity was gradually produced in a horse. When immunity was established the serum was taken and injected into rats, who previously had received a lethal dose of virulent cultures of B. Yersin. All the animals injected within two hours of receiving the lethal dose of the culture survived, in spite of symptoms of plague. From his observations the author concludes that there is an exact biological equivalence between the B. coli of the rat and the B. Yersin, and that the origin of plague is to be found in the B. coli and its passage from rat to rat, which changes its properties and renders it intensely pathogenic for man.

In most of the papers published on plague we see mention of the "Bacillus of Kitasato-Yersin." This is, as pointed out by Yabé,[2] quite a misnomer. The isolation of the responsible bacillus dates from the epidemic in Hong-Kong in 1894. In that epidemic independent researches were made both by Kitasato and by Yersin. Each described a bacillus, and the two organisms were quite different morphologically. Each claimed that his bacillus was specific. Recent observations have shown that Yersin's conclusions were correct, and that the bacillus described by him is undoubtedly the specific organism of plague. This is now acknowledged by Kitasato. The bacillus originally described by the latter observer is only present in septicæmic cases, and is not present in the pneumonic or bubonic types.

The life history of the bacillus in pure culture has been studied by Schultz,[3] especially with a view to determine the duration of the life of the organism under suitable circum-

[1] "Comptes Rendu Hebdomadaires." 1900. Vol. xvii. p. 93.
[2] *Journal of Tropical Medicine.* No. IV. 1901. P. 59.
[3] *Centr. für Bacteriol.* Bd. xxix. No. v. p. 169.

stances. From a series of observations, he finds that the bacillus can, under certain circumstances, retain life and virulence for four years. This is not to be ascribed to the formation of endogenous spores, but the maintenance of life is favoured apparently by a shrinking together or aggregation of the protoplasm. In this condition, which cannot be considered sporulation, the bacteria can withstand death for a lengthened period.

Konstansoff[1] has studied plague from the point of view of the other hæmorrhagic septicæmias, and finds that plague occupies a special place. Active and passive immunity against chicken cholera and swine fever have no influence upon the course of the infection of plague. Active immunity against plague has no influence against infection with chicken cholera or swine fever. Thus plague occupies a position of its own amongst the hæmorrhagic septicæmias.

The points of entrance of the infection in plague are numerous. The skin, the mucous membranes, the parenchyma of the lungs, the stomach and intestines, will all admit of the entrance of the organism. Much stress is placed by one observer upon the skin of the feet as a possible point of entrance of the poison amongst natives of India.

In the recently issued Report of the Indian Plague Commission, the clinical varieties or types of the disease are discussed by the President. As the fundamental basis of classification the degree of severity of the disease is taken, and three types are recognised.

(1) *Pestis minor.*—The mild or phantom plague, including the abortive, atypical, and so-called ambulatory forms.

(2) *Pestis major.*—The disease, presenting in its most usual full development the standard type, having many general and local symptoms, and especially glandular enlargements, elevation of temperature, and great prostration; always a virulent affection, and occasionally so much so that death is caused before all the manifestations of the type have had an opportunity of being produced, as in the so-called septicæmic plague or pesticæmia.

(3) *Pestis pneumonica*, resembling in many respects the more severe form of the second group, but specially characterised by the early appearance of inflammation of the lungs.

In pestis minor the patient suffers from sleeplessness, slight pyrexia lasting only a few hours, from tenderness and pain over one or more superficial glands, usually those in the groin, and occasionally from nausea and vomiting. The patient is rarely confined to bed, and even the ordinary avocations may

[1] *Centr. für Bacteriol.* No. iii. p. 86.

not be interrupted. These cases occur not only during the prevalence of virulent forms of plague, but also before these forms have become general, and during the decline or at the end of outbreaks. There seems little room to doubt that the form is capable of propagation from infected persons or things.

In pestis major the typical symptoms may be so quickly produced that no premonitory symptoms are observed. There is headache, giddiness, sleeplessness, palpitation, nausea or vomiting, pains in the limbs, lethargy, and weakness. The gait is unsteady, the mental processes are slow. After these symptoms have continued for a few hours, rarely so long as twenty-four hours, signs set in, a febrile temperature is developed, the pulse and respirations are rapid, the skin is hot and dry, and a bubo or buboes are present which are painful and tender. The buboes may appear concurrently with the prodromal symptoms, but most commonly from the second to the fourth day, rarely so late as the eighth day. The patient now lies in an apathetic and listless condition, the face flushed, the eyes half closed, congested, yellow, and sunk, and the pupils either dilated or in their normal condition, unless contraction has been produced by conjunctivitis or inflammation of the deeper structures in the eyeball. The posture is distinctive of prostration and helplessness. Occasionally there is delirium. The speech is husky, slow, and syllabic. The tongue is dry and coated, the bowels constipated. There is a slight but offensive odour distinguishable. The urine may contain albumin. If the course of the illness be a favourable one, the temperature gradually falls in from two to five days, and the general and local symptoms disappear. When, however, as usually happens, the termination is not recovery, death may be caused by failure of the heart's action, more rarely during a protracted illness, or by exhaustion from continued suppuration of one or more buboes.

Pestis septicæmia transcends in severity the ordinary pestis major. Death may occur then in from a few hours to five days. There is great nervous and muscular prostration. When death occurs in a few hours the condition is usually known as pestis siderans. The distinctive characteristics of septicæmic plague are not, however, clearly defined.

Pestis pneumonica, the pneumonic form of plague is of great interest in reference to the extension of the disease. The type is characterised by the abrupt development of symptoms, and especially of symptoms characteristic of pneumonia. Inflammatory swelling of the external lymph glands is usually absent. The expectoration rarely presents the characteristic appearance of the pneumonic sputum. Physical examination

shows circumscribed areas of consolidation. Ronchi and crepitations are audible. As a rule, the patient dies within a few hours of the commencement of the illness, but may live till the third day. If death does not occur within the first two days, envolvement of the lymph glands in the neck or axilla may appear.

It is important to note that the different types are intimately related. One type may not only produce its own type, but may also produce any of the other types.

As regards the question of diagnosis, pestis major is an easily diagnosed condition when developed in its full clinical picture. It is when it occurs in the less frequently developed varieties, as with bowel complications, that difficulties of diagnosis arise. In the rare septicæmic variety so rapidly fatal, a diagnosis during life may be impossible even by bacteriological examination. Pestis minor always presents difficulties when the diagnosis is based upon the symptoms of individual patients. If buboes are present the diagnosis may be arrived at by the exclusion of other causes of glandular swelling. If buboes be not present the diagnosis is probably impossible. In both varieties the diagnosis is rendered practically certain if evidence of the prevalence of similar cases and of infectivity be obtained. In primary plague pneumonia the microscopic examination of the sputum reveals the presence of plague bacilli at all the stages of the disease. Microscopic examination of the sputum in secondary pneumonia, broncho-pneumonia, and of the material obtained from the non-suppurating buboes renders the diagnosis of pestis major certain.

In relation to the difficulties of diagnosis, it is interesting to note that in South Africa mild cases of glandular enlargement of an obscure nature occurred amongst the natives working in the docks at Cape Town long before the definite outbreak of plague. Killog, of San Francisco, reports a similar case in a Chinaman, who at first was treated for a so-called gonorrhœal bubo, but *post-mortem* examination showed the presence of plague bacilli.

On the treatment of plague one of the most notable recent publications is the report of the superintendent of the Plague Research Laboratory, Bombay. Major Bannerman has issued up to the end of 1900 no less than 1,628,696 cases of Haffkin's plague vaccin. The facts and figures in the report are striking. "Without exception there has been a striking reduction in plague mortality, and also a markedly favourable effect on the case incidence has been produced." The conclusions in the report are—(1) that the inoculations are harmless; (2) that when given in the incubation stage, *i.e.* before the signs of plague

are apparent, the inoculation has in many cases the power of aborting the disease; (3) that inoculation confers a high degree of immunity from plague, and so reduces greatly the number attacked; (4) that when, in spite of inoculation, a person is attacked, his chances of recovery are much greater than in the case of the uninoculated.

The Commissioners in their report conclude that inoculation sensibly diminishes the incidence of plague attacks, but that protection is not absolute. It also diminishes the death-rate. The protection seems to vary in duration from a few weeks to a number of months.

The serum therapeutics of plague is not very hopeful at present. There appears to be clinical evidence that the serum of Yersin has a favourable influence upon the disease. In the observations with Lustig's serum the mortality in one series of observations was reduced eleven per cent.

The Commissioners conclude that on the whole a certain amount of advantage accrues to the patients both in the case of those injected with Yersin's serum and of those injected with Lustig's serum. The serum may, however, in certain cases have contained toxic or anti-bacterioidal elements and have done harm.

In the public health aspect the cry of all the writers on plague is "Sanitate, sanitate, sanitate!" While vaccination has given good results, sanitation will do even more. It is only by sanitation that the scourge can be stamped out.

In the report of the Plague Commission there is some difference of opinion as to the value in India of chemical disinfection. The President, in a minority report concludes that it has never in itself proved sufficient to arrest the progress of the disease, and that its exclusive application is doomed to failure.

Stress is laid upon the Evacuation; the opening up of houses, to give free ventilation and permit of the influence of sunlight, is of more importance than even chemical disinfection. Inoculation and the destruction of rats are strongly recommended.

In the *Annales de l'Institute Pasteur* for April 1900, Danysz published some observations on the infection of rats by a coccus-bacillus, which closely resembled the bacillus coli. Great hopes were based upon the possibility of a wholesale destruction of rats by means of this infection, thus clearing warehouses and drains of the vermin. The results obtained with the Danysz bacillus in laboratory work was undoubted, but the practical application of the method to warehouses and drains has been very disappointing. Sakorraphos[1] has given the infection a careful trial in the drains of Athens, and finds

[1] *Journal of Tropical Medicine*, 1901, p. 102.

that the results are negative. Not only is the microbe not sufficiently virulent, but the healthy rats do not devour the bodies of those who succumb to the infection, and it is impossible to set up an epidemic amongst the rats. Experiments[1] upon a large scale were carried out in a dock warehouse in the Port of London, and were wholly negative and most disappointing, the conclusion being that as a practical means of destroying rats the bacillus was useless.

The inevitable conclusion of our present knowledge must be that while inoculation is of the greatest value as a prophylactic, sanitation gives the only real hope of stamping out the scourge.

SURGERY

THE FREEZING TEST OF THE BLOOD TO DETERMINE THE FUNCTIONATING POWER OF THE KIDNEYS FROM THE SURGICAL STANDPOINT

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FOR many years surgeons have in operative work placed great importance upon the state of the kidneys as a determining factor in prognosis. The presence of albumen or of sugar in the urine being deemed more particularly an indication of possible disaster; so also too little urine, especially if containing tube casts, has been considered a danger. In all the earlier works we find reference made to, and stress put upon, those departures from the normal state of the urine. Later we find that urine, large in quantity and of low specific gravity, with or without albumin or tube casts, has been considered a sign of renal incompetence and a marked cause of increased risk in operative work. Such abnormal states of the urine were believed to be particularly dangerous in operations, even when trivial in their nature, upon the urinary track, but their significance has also been recognised in general surgical work. With improved chemical analysis the quantitative excretion of urea has had special attention; and in cases where this has dropped to half the normal diurnal quantity when ordinary diet was being taken, the danger of grave operations has been recognised. In the last few years, owing to the advance in renal surgery, further efforts have been necessitated to determine the functionating power of the kidneys, and also the functionating power of each kidney. To three of these methods attention may shortly be

[1] Klein, *Lancet*, Aug. 17, 1901.

directed, all of which in the latter case—the functioning power of each kidney—depend upon a comparatively recent departure in urinary technique—viz., interureteral catheterisation. Such catheterisation is easily carried out, as a rule, in the female by Kelly's or Albarran's cystoscope, but in the male when using even Albarran's perfected instrument with the ureteral catheter on the same side as the light, and with much practical experience, the difficulty is much greater. Further, the method by some is thought not to be devoid of risk in patients in whom the bladder contents are septic, inasmuch as infection may be conveyed to the kidney. This no doubt is partly overcome by catheterisation of the ureter of the diseased kidney, and the collection of the urine, excreted by the other, from the bladder without ureteral catheterisation.

The three methods referred to are: 1st. Estimation of the urea in the urine from each kidney. 2nd. The rapidity, duration, and amount of excretion of methyl blue after subcutaneous injection of a 5 per cent. solution. 3rd. The estimation of the sugar excreted after subcutaneous injection of fluoridzin, which causes a temporary diabetes. The two last of these methods are described in various papers: Illyes, *Ann. des mal. gen. urin.* 1900, Achard and Delamarre, etc., and I do not propose to detail them here, as my wish is to point out that although in some cases these methods may be useful, yet in the light of the method which I am about to specially describe, it is probable that as a rule they may be dispensed with. Regarding urea estimation, it is known that the quantity excreted is not constant, but varies at different times of the day, so that for accurate observations it is necessary to continue the examination over several days, and this has a great disadvantage if ureteral catheterisation is being employed. Apart altogether, however, from these considerations, we must bear in mind that ureteral catheterisation is neither practical nor justifiable in every case. Now fortunately another method, that of gauging *the freezing point of the blood*, has been introduced—a method which is so simple that if it prove reliable it must replace the others to a great extent, if not entirely. This method depends on osmotic pressure; the more molecules in solution in a fluid the lower is the freezing point of the fluid. Distilled water is taken as the standard for the normal freezing point; normal blood has a freezing point of $-0{\cdot}56°$ lower. A variation of $\frac{1}{100}$ of a degree above or below this may be considered normal, but any greater variation than $\frac{1}{100}$ on the minus side means a dangerous amount of solid matter in the blood, and that signifies imperfect functioning of both kidneys. That is the essential point in the rationale of the procedure. To carry it out the method is as

follows:—Beckmann's apparatus, supplied by Muencke, Berlin, is used, and consists in its simplest form of a very finely graduated thermometer, divided into a scale of $\frac{1}{100}$'s from $-5°$ C. to $+1°$ C. A glass receptacle for the ice and salt which is used as the freezing mixture, and a reservoir 1 inch in diameter by 4 inches in length which is used to hold the blood or urine, the freezing point of which is to be tested. The blood is drawn off from a vein by venesection or through a hollow needle, about 2 to 4 drachms being required. This blood is caught in the glass reservoir, which is then placed in the freezing mixture. The mercury bulb of the thermometer is put into the blood, and a platinum ring stirrer is used gently to keep the blood moving so that it is equally cooled down.

At first the mercury falls until it may be two or three degrees below zero, and then suddenly, at the moment of freezing, it quickly rises to the maximum point of freezing, and remains stationary there for some time. A careful note of the maximum point reached is taken, and that gives the freezing point, which is compared with that of the freezing point of distilled water, and normally is found to be $-0{\cdot}56°$ C. lower. Kümmell designates the freezing point by a symbol for shortness, using a small delta (δ) for that of blood, and the capital Δ for that of urine. The value of the freezing point of blood is not restricted to renal cases, but should be used in patients who are suffering from affections which necessitate operative interference, and in whom it is questionable whether operation can be performed safely. In such cases if the freezing point be higher than $-0{\cdot}58$, the operation should, if possible, be deferred until the freezing point is lowered to $-0{\cdot}57°$ C.

The literature of this method is not extensive, and two papers by Kümmell, the well-known surgeon of the Eppendorph Hospital, Hamburg, give perhaps the best account of its use in a large number of cases. One or two cases from the first paper (*Münchener Med. Wochenschrift*, Oct. 1900) are inserted in the abstract which follows of the second paper which appeared in the transactions of the 30th German Surgical Congress, Berlin, April 1901.

One hundred observations were made in healthy and diseased patients, in many of which control observations were possible by operation, or later by autopsy. As a result, the conclusion is justified that the determination of the freezing point of the blood with ureteral catheterisation always gives a safe guide for the sufficiency of work done by the kidneys, and the capacity for work of each, and accordingly justifies the recommendation of the method. The difficulty of judging the functionating power of the kidney, which is especially important where

excision is in question, has hitherto been very great. Without doubt, palpation usually enables us to say the second kidney is present, but does not enable us to say it is healthy. Markiewicz reports from literature 234 cases of single kidney, and in three cases extirpation of a single kidney had been done with a necessarily fatal result. Within the last few years 10 cases of fusion of the kidneys (horseshoe) have been reported. The question, however, is mainly when both kidneys are present, if one be removed is the other capable of functionating efficiently. Markiewicz reports 32 cases in which the kidney which was left was diseased, and in 28 of which death occurred from uræmia after a few days; 11 were cases of stone, 6 of tubercle, 2 carcinoma, and 2 hydronephrosis. This number might be increased by unpublished cases. In one case the author had a similar experience where even cutting into the kidney failed to show disease. The patient had hæmaturia and pain in one kidney, and on cutting down on the painful kidney, and splitting it to the hilus, no disease was detected. Later death occurred, and on autopsy there was a large tumour in the opposite kidney, and one the size of a hazel nut in the kidney operated upon. Diagnostic mistakes can scarcely be avoided by previous methods. Palpation is most valuable in enlargement of the kidney, but is often difficult. Cystoscopy may allow the ureters to be seen, and the urine coming from them with it may be seen to have abnormal appearances. Ureteral catheterisation assists still more—it tells us that both kidneys are present and secreting—the discharge from each may be collected and examined separately, so that the state of each kidney is known. In some cases this however is impossible, although the greater the experience of the operator the fewer these will be. Still some conditions are insurmountable. Suppose it be used, but both kidneys are affected, dare we remove that chiefly diseased, *i.e.* will the other compensate? Ureteral catheterisation assists in this decision, but does not definitely settle it. This can only be settled by taking the freezing point of the blood and urine. Freezing of the blood simply tells us whether kidney functioning is going on; but if conjoined with ureteral catheterisation, it tells us which is the diseased and which is the healthy kidney, and therefore upon which operation should be done. The dangers of such catheterisation have been exaggerated—Kümmell believes them to be slight. He has had no bad results, and quotes Caspar, Albarran, and others who have had 1000 cases with no untoward result, and remarks that it is as safe as bladder catheterisation. He advocates the use of Albarran's cystoscope. At this point in the paper he explains *Osmosis*, and the rationale of the

freezing point of blood method. Korányi introduced it, and made many calculations always with the same result, and others have corroborated his observations (Lindemann, Dreser, Richter, and Roth). The conclusion is that operative procedures must be avoided until the freezing point of the blood is approximately −0·56° C. If tumours of the kidney, malignant or simple, or uncompensated cardiac lesions be present, the conditions are altered. In a table which he gives in every case of normal kidney, the freezing point is −0·56°. Among 65 cases which were suffering from cystitis, paranephric abscess, etc., in only four cases was the freezing point of the blood −0·55°, and in four cases −0·57°. Even in typhoid fever the freezing point only varied between normal limits.

Simpler than the freezing point of blood is that of the urine itself, but it does not seem so reliable. The physiological differences are much greater, varying from −0·9 to −2·0°; but still it may be assumed that anything below −0·9° is a sign of defective kidney functioning. In regard to the urine, ureteral catheterisation also increases the value of the method.

At this point Kümmell describes the method in detail, stating that he does so as it seems to be so little known. He points out that centrifugalisation of the blood is not required, as blood and blood serum have the same freezing point, the explanation of this being that osmosis depends on the molecules in solution, not in suspension. And upon this the advantage of the freezing point over the specific gravity estimation rests, as the latter only gives an idea of weight, while by osmotic pressure we get the actual density. The specific weight of blood varies from 1046 to 1067, depending on the age, sex and state of nutrition of the patient; while osmotic force is very constant, and corresponds to a lowering of the freezing point = −0·56° C. When the urine is used it is frozen immediately after micturition, and the presence of albumin does not affect the result.

With regard to his personal experience of the method, he gives 26 cases of operation when the functional capacity had been settled. In 17 pyo or hydronephrotic and in 7 tuberculous cases nephrectomy was performed, with 22 cures and 2 deaths. In 2 cases there was double disease. In one, calculous anuria of five days' duration, the freezing point of the blood was lowered to −0·65°. This patient, however, after the removal of the stone, recovered. In the other, double polycystic kidney, the freezing point was −0·69°, and the patient died of uræmia. In all the 24 cases the removed kidney was much destroyed, so that removal was needed. The capacity for compensation assumed before operation from the investigations made corre-

sponded absolutely with that got afterwards. After nephrectomy an increase occurs, but later the normal difference is got. It seems as if the remaining kidney cannot at first regulate properly. If the blood has the normal freezing point, and there be a corresponding value of the urine, it is a sign of a full functionating power of one kidney, and a safe guarantee that the diseased kidney may be removed.

Kümmell reports the following cases also, which may be quoted :—

In two cases of renal bleeding in which ureteral catheterisation gave from the one kidney a bloody urine and from the other a clear urine without albumin and casts, and in which at first the assumption of one-sided tumour was suspected, operative procedure was refrained from, as the freezing point of the blood was over −0·60°. Later, in both cases, hæmorrhagic interstitial nephritis was ascertained.

In a case of left paranephric abscess, in which, after incision, a urinary fistula formed, the freezing point was −0·59°. Gradually, with increasing strength of the patient, in about four weeks the sound kidney took over the work of the diseased one, the freezing point rose to −0·57°, extirpation of the kidney with the urinary fistula was carried out successfully, and the remaining kidney functioning normally, the freezing point remained at −0·57°.

Another case was that of a strong man æt. 35, with colic-like pains in the left side. No tubercle. Had history of previous gonorrhœa. Pus and blood in the urine. By cystoscopy the left ureteral opening was seen to be wide with pouting of the mucous membrane, as is seen in tubercle of the kidney which has affected the ureter. Ureteral catheterisation was difficult, as the instrument easily caught in the mucous membrane. In the urine of this side there was much pus, but no tubercle. From the opposite kidney the urine was dark and muddy, but not so bad as the other; it contained pus, but the mouth of the ureter was normal. The diagnosis, from the appearance of the left ureter, was given of tuberculous left kidney, although the possibility of stone with pyelonephritis was also entertained. By freezing the blood it was seen that the right kidney was functioning efficiently, so the left was excised with a successful result.

An abstract on one of Korányi's papers on the above subject will be found in *The Scottish Medical and Surgical Journal*, 1899, Vol. IV. p. 276.

GYNECOLOGY AND OBSTETRICS

By R. C. BUIST, M.D., M.R.C.P.Ed.,
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On Inflammation of the Breast.—Whether he defines them for himself or not, one is not long in practice before he has opportunities of observing two varieties of inflammation of the breast. In one pus can be expressed from the nipple, in the other not. French writers, who most clearly make the distinction, term them "galactophorite" and "lymphangite du sein." Maygrier has just published the statistics of the last three years' experience in the Maternity of the Charité at Paris, and his observations are of much interest (*L'Obstétrique*, 1901, July, p. 324). The matter is important in relation to the diagnosis of other puerperal infections.

Of 2432 women, 11 died, of whom 6 had come in already infected. In 73, not including the breast cases, the temperature was over 38° (100 F.) for more than one day. Of these 12 had come in already infected. For the wards this gives a death-rate of ·2 per cent. and a morbidity rate of 2·50 per cent. Breast affections occurred in 139, galactophoritis 51, lymphangitis 51, and both together 37. With lymphangitis alone the right breast was affected 17 times, the left 17, and both 17. With galactophoritis alone, the right 12, left 22, both 17. With both affections, right 12, left 11, both 14. Lymphangitis most often arose between the third and ninth day, galactophoritis between the sixth and twelfth. When both occurred the lymphangitis was mostly first. The temperature in lymphangitis usually rose sharply, often with a rigor, to 40° (104° F.), and fell quickly in one, two, or three days. When superficial it never lasted more than six days. In galactophoritis it rose more slowly, often without rigor, and was seldom so high. These cases generally lasted longer. Galactophoritis is less painful but more tender. Recurrence is rare in lymphangitis, less so in galactophoritis. Suitable treatment being adopted early, only one case of lymphangitis suppurated, and methodical expression usually avoided abscess in galactophoritis. Diagnosis is easy on local examination, the distinguishing character of galactophoritis being the expression of pus from the nipple. Staphylococci were constantly present, but other microbes were frequently found as well. The cases showed a predilection for one particular ward, and staphylococcus albus was found in the air in considerable quantity. Nine cases had fœtid vaginal discharge. For the mother the prognosis is good when treatment is methodically carried out. For the child there is much danger in nursing it from a diseased breast.

In treatment prophylaxis is most important. The Charité method is as follows. After delivery the breast is carefully washed with soap and covered with sterilized gauze and rubber jaconet. Before and after each nursing the nipple is carefully washed with absorbent wool steeped in warm boric lotion. The child's mouth is washed with weak boric lotion before each suckling, and the hands of mother and nurse are carefully looked after. Fissures are treated with compresses steeped in 20 per cent. alcohol and water, and dressed with a saturated alcoholic solution of orthoform. When infection occurs a special nurse is sent to the case and is not allowed to attend healthy cases. The child is at once kept from the affected breast, and is never put back sooner than two days after all pus has disappeared. The treatment of lymphangitis is by warm boric compresses. These are also used in galactophoritis, but the essential treatment of this is methodical expression of the pus. This is sometimes so painful as to need an anæsthetic. The breast being steadied with one hand, the other works from the deeper parts of the acini to the nipple. Experience shows that there is no fear of the method producing abscesses.

The paper of Müry (*Zur Prophylaxe der Mastitis. Beitr. z. Geburtsh. u. Gynæk.* Bd. V., S. 145, 1901) extends the subject in an interesting way. It is founded on the experience of the University Klinik at Basel, and gives the statistics from 1868 and the details of an epidemic in 1896, which, like others, ran its course in a particular ward. The whole number of births was 13,483. In 6482 up to 1891 there was a rate of suppurative mastitis of 1·45 per cent., with a maximum of 7·8 per cent., and cases aborting under treatment averaged 6·1 per cent., with a maximum of 22 per cent. From 1892, when systematic treatment with boric dressings was introduced, there were 7001 births, with an average of suppurative mastitis of ·22 per cent., and 1·59 per cent. aborting under treatment. In the 2268 births in the last two years there was not a single case of suppuration. The procedure is as follows. After delivery, nipple and areola are cleansed with saturated boric lotion, crusts being removed with vaseline. The nipple is then dressed with a gauze compress soaked in 4 per cent. boric lotion covered with guttapercha, and over both breasts a sterile pad of gauze. The dressing is renewed after each nursing, and the nipple and the child's mouth are cleansed with boric lotion before and after each suckling. Bacteriological observations made from a series of cases, in which one breast was dressed and the other left bare, showed a distinct relative decrease of bacteria both in the skin and in the milk of the dressed nipple.

Anatomy and Physiology of the Breast (Keiffer, *L'Obstétrique*, Sept. 1901).—This paper reports the results of a careful investigation of the breasts of the bitch. It is fully illustrated by good microphotographs, and marshalls the results under the nervous, vascular and epithelial systems of the breast. The nervous elements are of two varieties, plexuses of fine axis cylinders and small cells, arranged specially along the vessels, in the connective tissue; and (2) longitudinal fibres not interrupted by cells, and furnishing branches to muscles, glands, and the deep layers of the epidermis. Points of fusion of these systems could not be demonstrated microscopically. Experimental stimulation of a nipple produced contraction not only of that breast but of its companion, and of the uterus. This is consonant with clinical experience. Stimulation of the nipple excites a vaso-dilator action on the breast, and the quantity of milk delivered by a breast increases with the repetition of the demands on it. For vascular system the mammary lobule has a central artery along the duct and two veins, one central, one peripheral. At all parts where the secretory activity is great, the distention of the alveoli gradually produces anæmia by pressure. In secretion the stimulated epithelium enters into karyokinesis, and the cells distended with fluid transform the blood serum and possibly some lymph into the chemical products which constitute milk. The nucleus exercises a controlling action, persisting till the milk is completely formed and the cell disorganised.

LARYNGOLOGY

DISEASES OF THE EAR, NOSE, AND THROAT

By R. M'KENZIE JOHNSTON, M.D., F.R.C.S.Ed.,
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Some recent remedies and applications in Laryngo-rhinological practice.—Commenting on the activity in recent years of the synthetic chemist, Siegmund Moritz, in an interesting paper, recounts his experience of some new preparations, which are of value both to the specialist and the general practitioner.

He first refers to cocaine, which can hardly be called a new drug now. Its uses are familiar to all, and it has done much to revolutionise the work of the special department. One of its drawbacks, however, is its bitter taste which, it is said, tends to produce vomiting, and occasionally profuse salivation, with the result of interference with the progress of a laryngeal operation. Moritz finds that this bitter taste can be covered by

the addition of saccharine, which at the same time prevents the salivation and vomiting. He also discovered that the anæsthetic action of the same drug can be prolonged, even for some hours, by the combination of antipyrine with the solution. In painful throat affections, such as advanced laryngeal phthisis, he has used a 25 per cent. to 50 per cent. solution of antipyrine either with or without cocaine, and he finds not only that it gives relief from pain, but that it has a beneficial effect on the ulceration.

For the production of a prolonged feeling of anæsthesia the "new orthoform" is a drug of considerable value. It is usually applied in the form of powder, but he points out the advantage of using it in an emulsion, according to the formula of Freudenthal :—

℞ Guaiacol	- -	5 to 10 parts.
Menthol	- -	2 to 15 „
Ol. oliv.	- -	30 „
Vitelli ov.	- -	30 „
Orthoform	- -	12 „
Aquam ad	- -	100 „

M. Ft. Emulsio.

The hydrochloride of orthoform, a soluble salt, was next suggested, but was found to be too irritating. Another drug was produced by the same makers, closely allied to it, and also soluble, called Nirvanin, but it has not given great satisfaction in the author's hands.

Of new drugs which claim to influence the respiratory centre, and to diminish dyspnœa and tendency to cough, the author only mentions heroin and oxycamphor. A 25 per cent. alcoholic solution of the latter, which is supplied under the name of oxaphor, is more stable than the drug itself. In doses of 40 minims upwards it gives decided relief to dyspnœic patients, whether the dyspnœa is pulmonary, laryngeal, or cardiac. Heroin he has used with varying success. Sometimes it has done well in 1/12 grain doses, given not more than three times in the day, but at other times it has produced nausea, headache and once serious collapse.

For the removal of laryngeal papillomata, Heryng has recommended the use of an oily fluid, smelling and looking like carbolic acid, known as phenyl-sulpho-ricinic acid. It is applied by means of a cotton-wool holder, and well rubbed into the part, and the author speaks with enthusiasm of his experience with it. He also finds trichloracetic acid very useful as an escharotic in the treatment of obstinate syphilitic ulcers. (*Medical Chronicle*, July 1901).

Some papers on the treatment of Laryngeal Tuberculosis.—The great interest which has been exhibited of late in the subject of tuberculosis, has led to a number of discussions and papers dealing, among others, with the laryngologists' view of the subject. Koch's recent observations on the cause and prevention of tuberculosis have received such wide attention, that it is safe to assume that everyone is familiar with them, as they appear in his address to the British Congress (*Journ. Laryng.*, August 1901, and other Journals).

Sendziac, in a paper read at Cracow last year, summarises the history of the treatment of laryngeal tuberculosis under three heads—the period of therapeutic nihilism prior to 1880; the period of extreme optimism, which includes the energetic treatment advocated by Schmidt, Krause, and Heryng; and the period of equilibrium at the present time. That the *noli me tangere* period gave place to too energetic treatment and too great hopes seems clear, but whether we have yet reached a rational equilibrium is an open question. Of the more potent applications to the larynx Sendziac speaks highly of lactic acid, phenolum sulphuricum, and menthol, more especially the former; but of the long list of other remedies, each of which has had its supporters, he mentions them without enthusiasm. While an advocate of energetic local applications, he does not refer at any length to surgical measures. He looks upon general, and specially climatic, treatment as of the first importance, but still he recommends that the more extensive laryngeal lesions, requiring special local treatment, should be treated at home.

At the British Medical Association meeting the local treatment of laryngeal phthisis gave rise to an interesting discussion and exchange of views. Energetic surgical procedures found several supporters, among them being Lake, who thought that about 15 per cent. of all cases were suitable for cutting operations. The general impression conveyed seemed to be in favour of active local measures in a large number of cases, and of surgical methods in a limited number of selected cases. The difference of opinion seemed to be rather as to the frequency and class of case in which the latter procedure was justifiable. Some of the speakers were of opinion that general treatment was apt to be too much neglected by the laryngologist for topical remedies, and that apparent improvement in the larynx was of little avail unless accompanied by general improvement and arrest of lung mischief, and even might be brought about, in some cases, at the expense of the patient's general condition.

In a paper communicated to the British Congress, St Clair Thomson estimates that there are at least 75,000 cases in the United Kingdom who are suffering from tuberculous affections

of the larynx, or who are threatened with such, and points out that the widespread character of the disease demands the earnest attention of the laryngologist. Tuberculous affections of the larynx may be classed under the following headings: superficial ulceration, commencing from the surface; infiltration; infiltration with ulceration; and tumour formation. It is usual, however, to find two or more of these appearances combined. According to Lake the arytenoids and arytenoid space are affected twice as often as the vocal cords, and three times as often as the epiglottis and ventricular bands. The want of tension and impaired movement of the cords, often seen in early cases, is explained by W. Fowler, who considers the disease as largely a joint disease. Supporting his view by records of a number of autopsies, he says: "In every case the greatest mischief was in the immediate neighbourhood of the crico-arytenoid joint, and the joint itself was always implicated."

Reviewing present ideas as to treatment, Thomson only refers to what are known as the lactic acid and the surgical methods. Of the many other methods of local treatment which have been suggested from time to time he says their number is eloquent of their inefficiency, and he holds that any benefit derived from them is apt to be more than counterbalanced by the irritation and reaction they produce.

The author quotes J. Wright as saying: "The permanent radical cure of the local lesion of tubercular laryngitis is not materially hastened by the various methods of treatment in any but an insignificant number of cases"; and also Freundenthal to a somewhat similar effect. With these views the author is evidently strongly in accord, and he thinks the local treatment should be merely symptomatic except in a very limited number of cases. According to him we must look elsewhere than to surgical measures for progress in the treatment of laryngeal tuberculosis. He presses the great importance of early diagnosis, and he recommends that even suspicious cases should be placed under treatment, as in this way we would be able to save many cases that later on would present themselves only when the condition may have become incurable. Symptomatic treatment and the modern sanatorium treatment will do more for our cases, he believes, than local measures, and he strongly presses the advantages of rest for the voice; the disuse of the voice ordered being proportionate to the degree in which the arytenoid and its neighbourhood are affected. (*Jour. Laryng.*, Aug., Oct. 1901).

OPHTHALMOLOGY[1]

SOME USES OF PROTARGOL IN OPHTHALMIC WORK

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FOR the past few years the therapeutic value of protargol has been so highly praised that I determined, in spite of an acquired conservatism against the use of every new remedy, to give this salt of silver a trial. It was, however, only some twelve months ago that I ventured for the first time to employ protargol exclusively in the treatment of such diseases as ophthalmia of the new born, preferring the old and tried remedy, nitrate of silver, in very serious conjunctival affections. Since that time I have used it extensively both in hospital and in private work, and I now purpose bringing before you very briefly my experience of its usefulness.

It is, as you know, recommended chiefly in acute conjunctival diseases, such as catarrhal and blennorrhœal conjunctivitis, in 10 per cent. aqueous solution, and applied in the same way as an ordinary collyrium, but much more freely. Care must be taken that the solution find its way into both upper and lower cul-de-sacs. To do this it is not necessary (if the head be thrown well back) to evert the eyelids except when the conjunctiva is somewhat swollen. Nor is it necessary to remove the tears as in the case of nitrate of silver, for protargol is not affected by the sodium chloride. Its application is said to be painless, but I have not found it so, even when cocain has been employed beforehand. The pain is certainly less than that caused by nitrate of silver, and lasts a shorter time. It can with safety be employed by patients at home, an important advantage over nitrate of silver. I have found no bad effects, such as argyrosis, follow its prolonged use. It possesses marked germicidal properties, 10 per cent. being equivalent to 2 per cent. nitrate of silver solution, and as it does not readily coagulate the albumins of the tissues, its germicidal effect is not confined to the surface, but extends to the deeper layers.

In the treatment of ophthalmia neonatorum, I employ a 10 per cent. solution of protargol dropped into the infant's eyes every two hours, together with the frequent removal of discharge with warm physiological salt solution. The results thus obtained have been most gratifying, for the discharge becomes rapidly reduced, and the child opens the eyelids in a few days,

[1] Read before the Forfarshire Medical Association, Nov. 7, 1901.

an important point in view of the frequency of nystagmus in protracted recoveries. Of the treatment of gonorrhœal conjunctivitis by protargol, I have no experience, for no genuine case came under my notice during the past year.

In catarrhal conjunctivitis a 10 per cent. solution, applied every four hours or so, gives excellent results. This must be due to the double action of the drug—namely, its germicidal action and its astringent action on the dilated blood vessels of the conjunctiva. It is not so useful in chronic conjunctivitis, but in cases where the conjunctival discharge is greater than usual, it is a useful adjuvant in the treatment. When chronic conjunctivitis is associated with conjunctival thickening and ectropion, much better results are got by brushing the affected parts with a 2 per cent. nitrate of silver solution.

In ulcerative blepharitis, nitrate of silver and yellow oxide ointment are more useful than protargol either in the form of ointment or in solution. In simple blepharitis, protargol ointment was found useful, but not more so than yellow oxide.

Cases of phlyctenular conjunctivitis, accompanied by discharge, recover more quickly when treated with protargol solution and yellow oxide ointment, than when yellow oxide ointment is used, either alone or in conjunction with other collyria.

Sloughing ulcers of the cornea, due to conjunctival or lachrymal disease, heal more rapidly, if protargol solution be added to the usual remedies for such affections.

The only other condition in which I have had favourable results from the use of this drug is where a slight discharge is revealed by the attesting dressing used before operating for cataract. A few applications purify the conjunctival surface better than any other remedy I know of.

Meetings of Societies

The Medico-Chirurgical Society of Edinburgh

THE first meeting of the eighty-first session was held on Wednesday, 6th November—Mr A. G. Miller, President, in the chair.

Dr Melville Dunlop exhibited a boy aged three and a half years suffering from chloroma. He was very markedly anæmic, his eyeballs were so prominent that the lids could not be closed, and the palate showed growths of a purple colour. Dr Dunlop remarked that lympho-sarcomata usually originated in the

periosteum of the cranium, the majority growing from the orbit.

Dr Norman Walker showed three cases of lupus illustrating results of treatment by the X-rays. He said it was generally necessary to finish it off with one of the older methods.

Dr Walker also showed a Finsen light apparatus, and emphasised the necessity for pressing the lens on the diseased parts to render them anæmic, because the rays will not go through blood.

Mr Stiles showed a girl, aged seven years, after operation for plexiform angioma of scalp. It had grown much during the last twelve months; before operation it measured 3 inches by 2½ inches. All the branches of the external carotid were enlarged. It was decided to ligature the feeding arteries and then to apply electrolysis. All the twelve arteries going through the tumour were cut across and electrolysis was applied when the arteries had healed.

Mr Stiles also showed a child after operation for tuberculous disease of the frontal bone. Three months ago the child had fallen on the forehead and a tuberculous abscess, with tuberculous disease of the frontal bone, resulted.

In relation to this case, Mr Stiles showed the calvarium of a child who suffered from multiple tuberculous osteomyelitis of the bones of the cranial vault.

Mr Stiles next showed a hernial sac and strangulated testicle removed from a child during operation for irreducible inguinal hernia. On cutting down on the tense irreducible purple swelling and opening the sac it was found that the intestine was not strangulated, but that the symptoms were due to the testicle.

Mr Stiles also showed a bodkin removed from a child's abdomen. It had lain transversely across the abdomen at the level of the anterior superior spines and had been diagnosed as tabes mesenterica.

Dr Harvey Littlejohn showed an enormously dilated pulmonary artery; also a specimen showing extra-peritoneal rupture of the bladder, the result of a kick on the abdomen.

Dr Alexander Bruce read a paper on the "Motor localisation in the lumbo-sacral region of the spinal cord," which appears in this month's *Scottish Medical and Surgical Journal.*

The President, Mr A. G. Miller, delivered his valedictory address. It appears in the current number of *The Scottish Medical and Surgical Journal.*

The following have been elected office-bearers for 1901-1902:—

President: Professor T. R. Fraser. *Vice-Presidents*: Drs James Andrew, Charles Underhill and James Ritchie. *Council-*

lors: Drs J. W. Ballantyne, George Kerr, Kenneth Douglas, Noël Paton, William Russell, Logan Turner, and Messrs A. G. Miller and H. J. Stiles. *Treasurer*: Dr Harvey Littlejohn. *Secretaries*: Dr G. H. Melville Dunlop and Mr Alexis Thomson. *Editor of Transactions*: Dr William Craig.

Edinburgh Obstetrical Society

THE first meeting of the sixty-third session was held on the 13th November.

After the Treasurer, Dr William Craig, had submitted his financial statement, the election of office-bearers for the session was made. Dr James Ritchie, F.R.C.P.Ed., was elected President for the ensuing two sessions, and Drs Haultain and Haig Ferguson as Vice-Presidents.

Dr Milne Murray gave his valedictory address on quitting the presidential chair. After returning thanks for the pleasant time which he had spent as occupant of the chair, he drew attention to what had happened during his tenure of office. The loss of two Honorary Fellows of the Society had to be noted—Dr George Apostoli and Sir Wm. O. Priestley. The discovery by the first of the electrical cure of uterine fibroids was hailed with enthusiasm, but unfortunately the results generally obtained fell far short of the expectations which had been formed. The discrepancy between Apostoli's own results and those who followed him was not difficult to explain. His cause suffered from misinterpretation of his claims and his Gallic enthusiasm. Then the apparent simplicity of the procedure tempted men who knew little of gynecology, and less of electrical methods, to try their hands with results which could be easily predicted. On the other hand, some who gave it a fair trial were discouraged partly by the tedium of the process of treatment, partly by the fact of its uncertainty and inefficiency in certain cases, however gratifying its results might have proved in others.

Dr Murray ventured to assert, however, that in spite of these drawbacks, Apostoli's method of treatment would have been in general vogue to-day had it not been for the extraordinary success of hysterectomy in the hands of experts for the cure of fibroid tumours.

There were multitudes of women suffering from fibroid tumours who shrank from the suggestion of the knife, and refused to submit to surgical interference. That a very large number of these might be systematically cured by Apostoli's method did not admit of doubt, and Dr Murray did not

despair of the time coming when a woman might have some choice between a proposal for a hysterectomy and the somewhat melancholy consolation to be derived from the assurance that very few women die from a fibroid.

From the roll of Corresponding Fellows the Society had lost one—Dr Thomas Cayzer of Liverpool, while nine Ordinary Fellows had been removed by death.

Dr Murray then drew the attention of the members to one or two suggestions towards bringing the results of obstetric practice more into line with the ideals of obstetric science. In the address which he had given at the opening meeting of the preceding session he had stated that, in spite of all that had been accomplished, the puerperal mortality from septicæmia had not diminished during the past fifty years, and that the results of private practice fell short of those of the best hospital practice mainly because, in the first place, there was far too much meddlesome interference with a natural process; and in the second place, because, even when interference was indicated, it was often carried out with a total disregard to those principles which have been the basis of the triumphs of modern surgery. Dr Murray thought that the wide persistence of these vices of practice must be due to some radical defect in the teaching of obstetrics. It was inconceivable that, if men were thoroughly and properly trained, they would err so greatly in the very elements of their practice. He then passed on to consider how far the teaching of obstetrics in this country falls short of what ideal teaching should be. Until comparatively recent times midwifery absorbed almost all our attention. During the last quarter of last century the great advances in pathological knowledge and in abdominal surgery raised the study of the diseases of the female reproductive organs to be one of the most important in practical medicine. In no department have greater triumphs been achieved, in none has the application of scientific principles to the relief of suffering and disease met with a more ample reward. This increasing importance of gynecology tends either to displace obstetrics from its former position of pre-eminent importance or to prevent an adequate consideration of gynecology. It was thus becoming daily more plain that some rearrangement of the work which we are required to overtake must be made.

Dr Murray thought that the time was rapidly approaching when the subjects of obstetrics and gynecology must be dealt with in different courses. This seems absolutely essential if the young practitioner is to begin his work equipped with a sound working knowledge of obstetrics, and if the essential principles of pelvi-abdominal surgery are to be adequately taught. It

has been thought absurd that a "limited and restricted subject like midwifery" should occupy the same length of time as general surgery or medicine. Dr Murray, however, affirmed that it was not possible to overtake the whole of the details of the principles and practice of medicine or surgery in a hundred lectures or anything like this number; and most teachers who confine their prelections to the limits of a single course restrict themselves to an exposition of the principles of their subject as a whole, and a detailed account of one or more departments of it. If the young practitioner is acquainted with the general principles of the treatment of fractures and of fevers, he cannot go very far astray in the management of these conditions. In the department of obstetrics the case is materially different. The processes of pregnancy, parturition, and the puerperium are generally natural functions which require no interference in the strict sense of the term. There is, on the other hand, a very considerable minority of cases in which the process departs from the normal, becomes pathological in the highest degree, and in which two lives may become suddenly jeopardised, and one of them, if immediately saved, exposed to risk of permanent damage and depreciation. Such conditions as hæmorrhage (accidental, unavoidable, post-partum), eclampsia, transverse or face presentation, rupture of uterus, etc., must be dealt with as *sui generis*, and cannot be treated on general principles. If the appropriate treatment cannot be provided at once it may be in great measure useless. In practical obstetrics the practitioner is brought face to face with a larger number of cases which are dangerous to life, and which must be dealt *with as they arise*, than he will meet with in either medicine or surgery. Everyone knows that the greater part of the work of a general practitioner is concerned with the ailments of women and children, and the greater part of a woman's troubles are concerned with her reproductive functions. Therefore Dr Murray maintained that the most important part of the equipment of the general practitioner was a sound knowledge of the principles and practice of obstetrics and the elements of gynecology.

Dr Murray said that his position was that he should confine the ordinary course of midwifery to a careful review of the whole subject of obstetrics, and that of the simpler modes of gynecological diagnosis and the elementary study of the diseases of women; and he would transfer the subject of gynecology outside this, including pelvic and abdominal surgery, to a special course, on the same lines as diseases of the eye. This rearrangement would mean a new chair and more money, but this should not be an insuperable obstacle. Properly used, the course of lectures is perhaps the most essential method of

scientific teaching. The lecture holds its own against books, and takes a place which no book can fill. Not less essential is the practical training which allows the student to apply with success the results of his systematic knowledge. After recapitulating the modes in which the student may obtain obstetrical experience, Dr Murray concluded that the vast majority of students leave Edinburgh, and other teaching centres as well, without any experience in the proper conduct of labour. Very few of them have seen an ordinary labour conducted from start to finish by one competent to demonstrate how little is required on the part of the accoucheur in the management of an ordinary labour. Nor have they been shown with what scrupulous care that little has to be done. Can we wonder if the advances of modern surgery have no counterpart in modern midwifery? How is this deficiency in practical teaching to be remedied? By a reorganisation of our Maternity Hospital to an extent which will enable students to obtain as sound an obstetrical training as they do in the wards of the surgical hospital. The first necessity is a students' residence either in or close to the maternity hospital. One large enough to accommodate twelve students would suffice if the period of residence were limited to four or five weeks. The second is the appointment of a permanent resident physician to act under the direction of the honorary staff and take the medical direction of the hospital in their absence, as well as teach the students in the hospital. The junior resident would take charge of the outdoor work of the hospital.

Dr Murray thanked the members of the Society for the opportunity they had given him of placing his thoughts before them, and ended by exorcising (in the words of John Milton) the ghost of despair which sometimes haunted us, seeking to paralyse us as we grapple with such problems—

> "Accuse not Nature, she hath done her part,
> Do thou but thine."

Dr Berry Hart read a paper on the *Nature of the Fleshy Mole* (Subchorial Tuberose Hæmatoma). After describing the naked eye appearance of the mole, the distinctive clinical features, viz., amenorrhœa for two or three months, the threatening abortion which passed off, were considered, and the difficulties arising in diagnosis. The uterus did not undergo a progressive enlargement, and the mole was cast off a varying number of months later. The characteristics of the expelled mass were described, and special attention was drawn to the finger-tip-like processes lying beneath the amniotic surface.

On section the mole presented the following structures:—amnion, chorion, intervillous spaces, the subchorionic processes filled with organising blood clot and a thin layer of serotina. The intervillous circulation was described, and especially the normal plugging of the serotinal veins. This was shown to be in excess in the fleshy mole, and its peculiar structure was finally stated to be due to (1) undue plugging of the serotinal sinuses, leading to engorgement of the maternal placental circulation; (2) tying down of the chorion where the chorio-basal septa were attached, and thus causing the subchorionic bulgings. The death of the fœtus was secondary to this. Naked eye and microscopic specimens were shown to prove these points.

The following gentlemen were elected Office-Bearers for Session 1901-2.

President, Dr James Ritchie. *Vice-Presidents—Senior*, Dr Haultain; *Junior*, Dr Haig Ferguson. *Treasurer*, Dr Wm. Craig. *Secretaries*, Dr W. Fordyce; Dr Lamond Lackie. *Librarian*, Dr Haultain. *Editor of Transactions*, Dr Lamond Lackie. *Members of Council*, Professor Simpson; Dr J. W. Ballantyne; Dr Boddie; Dr MacVie (Chirnside); Dr Milne Murray; Dr Berry Hart; Dr Brewis; Dr R. C. Buist (Dundee).

Glasgow Medico-Chirurgical Society

THE second ordinary meeting of this session was held on Friday evening, Nov. 1, 1901, the chair being occupied by the President (Dr W. G. Dun). There was a good attendance. The first item on the billet was an interesting paper on "Four Cases of Word-Blindness," by Dr Hinshelwood, who is well known for the keen interest he takes in this and allied forms of cerebral derangement. Of the cases described, one in particular merits more than a passing notice. It was that of a Scotsman, a school-teacher, who was conversant with, and able to read, four languages. He became totally word-blind to English, but could still read Greek fluently, while he was partially word-blind to French and German. Complete recovery took place. The above and other cases support Dr Hinshelwood's hypothesis, which he has frequently stated, that different visual images are stored up in separate though contiguous groups of cells in the cortex, so that, as in the case quoted, there may be interference with the visual images of one language, while those of another may at the same time be undisturbed.

In the brief discussion which followed, Dr Alex. Robertson and Dr Lindsay Steven took part.

Dr Carstairs Douglas then made a communication on the

"Nitro-Propiol Test for Sugar in Urine, based on over 200 Observations." The paper was divided into three short sections. (1) The test depends on the fact that ortho-nitro-phenyl-propiolic acid, when boiled with grape sugar in the presence of an alkali, yields indigo-blue. This acid, ready combined with sodium carbonate, is sold in tablet form under the trade-name of nitro-propiol. In using, about fifteen drops of the urine, well diluted, are boiled with a tabloid when sugar is revealed in even minute amount by the development of a blue colour. (2) As regards delicacy, it was found that it was distinctive where Fehling's solution was doubtful and the yeast test failed. It was, however, not more delicate or trust-worthy than the phenyl-hydrazine test. (3) With reference to fallacies, Dr Douglas found that it was liable to these in just the same way as the copper tests or any others where the essential point is a reduction. Nitro-propiol is reduced to indigo-blue by lactose, maltose, sulphides, potassium xanthate, and various other bodies.

Dr Hugh Galt contributed the third item in the billet, viz., "On a New Method of Preserving Museum Specimens." He said he had long sought for a simple, cheap, and effective preservative fluid for ordinary jar specimens, whereby the colour, shape, and cellular structure would be reasonably conserved. After various trials he selected the method which he brought before the meeting. The specimens were first cleansed in running water, hardened for a few days in spirit, and then preserved in a solution of 5 parts of sodium chloride, 1 part of potassium nitrate, and 1 part of chloral hydrate to 100 of water. This has proved quite satisfactory, and costs but 4d. per gallon. If it evaporate, all that is needed is to add water.

Dr Alex. Ferguson made a few remarks, and Dr Galt replied.

Owing to the lateness of the evening a paper by Dr Young was left over to a subsequent meeting.

Glasgow Obstetrical and Gynecological Society

THE opening meeting for the session was held on Wednesday, October 23rd, 1901, when the chair was occupied by the President (Dr Robert Jardine), with a large attendance of Fellows.

Dr Murdoch Cameron exhibited as a specimen a seven-month fœtus removed by Cæsarian section from the right cornu of a bi-cornuate uterus. He stated that he proposed to con-

tribute a paper later on in the session dealing more fully with this interesting case. Dr Edgar showed two specimens. (*a*) Uterus, with pyometra, removed by vaginal hysterectomy. (*b*) The sac and fœtus from a case of extra-uterine gestation.

A paper was then read by Dr W. L. Reid on the "Consideration of some Details in the Operation of Vaginal Hysterectomy." He discussed the various steps of the operation in some detail, giving an account of the procedure he preferred himself. In particular he stated that he infinitely preferred the ligature to the clamp, and, though he had tried the latter, had no intention of doing so as a routine. A discussion followed, in which Dr J. K. Kelly, Dr Crawford Renton, Dr Samuel Sloan, Professor Murdoch Cameron, and Dr Maclellan took part. Most of the speakers united in supporting the claims of the clamp over the ligature. Dr Reid then replied.

The President read a paper on a very rare complication of pregnancy—purpura hæmorrhagica, which had occurred in the course of a hyperemesis. The patient, a iii-para, aged 21, was admitted to the Maternity Hospital this summer, suffering from great vomiting, and being then seven months pregnant. The vomiting had been severe for a month before admission and the patient was much emaciated. The pulse was 120; the fœtal heart was audible. She was fed by nutrient enemata, and soon improved sufficiently to take milk by the mouth. The urine was scanty and contained pus. A few days later a purpuric rash appeared on the legs and arms and soon became general. There was extensive bleeding from the gums and the patient began to vomit blood. The fœtal heart could not now be heard. Dr Carstairs Douglas determined the coagulability of the blood by Wright's tubes and found the coagulation time to be 10½ minutes, or double the normal. She was given supra-renal extract by the mouth, 5 grs. t.i.d. Three days later a bloody discharge came from the vagina and labour set in, but the patient said she felt no pain till the head passed the outlet. She was given ergotine and strychnine, the uterus was washed out with a sterilized solution of supra-renal extract (30 grs. to the pint), and a saline transfusion was given under the breast. There was no post-partum hæmorrhage. She sank gradually and died three days later.

The post-mortem showed little in the way of gross lesions except an abscess in the right kidney. The stomach was filled with blood, but no naked eye erosions could be found on its surface. Iron was found deposited in the liver and kidney.

Dr Jardine gave quotations on this subject from Hirst and from Müller. The former stated that the disease always in-

terrupted gestation and that a fatal result often transpired from post-partum hæmorrhage. Müller's views were rather opposed to this. Dr Jardine agreed with Hirst. In the discussion which followed Professor Murdoch Cameron, Dr Kelly, Dr Carstairs Douglas and Dr Adamson took part.

Glasgow Southern Medical Society

THE first ordinary meeting for this season was held on Oct. 30, when the President (Dr John Stewart) delivered his inaugural address, which concerned itself largely with a plea for the retention of the all-round family doctor, and a protest against excessive specialism.

The second ordinary meeting was held on Nov. 14, in the Ophthalmic Institute, where, through the kindness of Dr Maitland Ramsay and his staff, an extremely interesting demonstration of cases and apparatus was given. Dr John Stewart presided, and there was a good attendance.

The following were among the chief items of interest:—

1. (*a*) A demonstration of cases of external disease and injury of the eye.

(*b*) An exhibition of fine stereoscopic photographs showing various morbid conditions of the fundus and external lesions of the eye, of some rarity.

2. In another room cases were arranged and prepared for ophthalmoscopic examination.

3. Collected in the tea-room were various optical instruments such as Hardy's ophthalmometer for detection of astigmatism, corneal microscope, demonstration ophthalmoscope, colour test apparatus, etc.

4. A fourth room contained an installation of Finsen's lamp for photo-therapeutic purposes, which attracted much attention. It was shown in actual use with a patient. The same room held the X-ray apparatus now used much for eye work, while a demonstration was also given of Buzzard's method of applying electricity directly to the external muscles of the eyeball.

5. This very successful meeting closed with a lantern demonstration on Hypopyon Ulcer.

Forfarshire Medical Association

A MEETING of this Society was held in University College, Dundee, on Friday, November 1st, at 4 P.M., Professor MacEwan in the chair.

The President referred to the loss the Association had sus-

tained by the death of Dr J. W. Miller, an esseemed and active member. Dr Miller, he said, had practised in Dundee for the long period of forty-four years. His life had been one of unceasing activity, of singular devotion to his profession and to the furthering of many objects relating to the health and well-being of the community. In consequence of his ability and integrity he took, at an early age, a high position among his professional brethren, and this position he maintained and strengthened in after years. Professor MacEwan stated that he, like many others present, had frequently met Dr Miller in consultation, and that he was always impressed by his kindness and courtesy, his ready and thorough grasp of the case under consideration, and the ungrudging trouble which he took in the interests of the patient. Dr Miller was a man of more than ordinary mental endowments, of great strength of character, and energy of purpose. He was open-minded, enthusiastic, and progressive. He seemed never to feel the touch of years, for to the end of his life he retained the mental freshness and receptivity of youth. It was his elasticity of mind, combined with a sympathetic nature, which endeared him to his patients as a physician, and to his friends as a genial and trusted companion. He held the office of Physician to the Royal Infirmary for the usual term, and during that time he published a paper on the "Thermometry of Continued Fevers," one of the best on the subject. Afterwards as a consulting physician and as a director, he rendered invaluable service in guiding the affairs of that institution. It was to his initiation that we owe the existence of our Maternity Hospital. In the work of the Sick Poor Nursing Society, of the Hospital for Incurables, and in the crusade against tuberculosis, he took an active part. Lastly, he was an energetic and ardent member of this Association, the last to pass away of those who were present at the meeting held in 1858. He was a frequent contributor of papers, and always took an active part in our discussions. In closing, the President moved the following resolution :—"That this meeting of the Forfarshire Medical Association desires to record its deep sense of the loss the Association had sustained by the death of Dr J. W. Miller, and its high appreciation of the great benefit which the Association had derived from his constant and active support since its formation."

The President also referred to the death of a former President, Dr Russell, of Arbroath, which had occurred recently after a short illness. He said that Dr Russell had an honoured place amongst his professional brethren in Arbroath, and moved "that the Association desires to record its deep sense of the loss it had sustained by his death."

Professor Chiene then delivered an address on the surgery of sixty years ago and the surgery of the present day. In it he referred to the great changes that had taken place in the nature of the operations performed, in the methods employed, and in the severity of the operations performed nowadays as compared with sixty years ago. The enormous increase in the number of operations was shown by statistics taken from Syme's and Lister's operation book, and contrasting them with those from his own operation book in the Infirmary, with half the number of beds and during the same number of months. The deaths after operation in those early days were shown to be largely due to blood poisoning, whereas now they were largely due to the severity of the operation.

Professor Chiene then suggested the direction in which advance in surgery might be made, taking up the treatment of tubercle, syphilis and cancer in this connection.

In closing he hoped, he said, that his remarks might stimulate the work of their Society. He pointed out that such a Society should stimulate, not depress, the general practitioner, for he could at least take an interest in scientific work. Practice and science, said Paget, went side by side.

The President in moving a hearty vote of thanks to Professor Chiene for so kindly coming to address them that day, and for his stimulating and instructive address, supported Professor Chiene from his own experience of surgery in Dundee.

Professor Stalker in seconding expressed the pleasure his old students had in listening to Professor Chiene's address.

This motion was heartily agreed to.

MEETING in the University College, Dundee, on Thursday, Nov. 7, at 8.30 P.M., Professor MacEwan, President, in the chair.

Dr M'Gillivray showed a patient with unusual rotation of the eyeball, rotation on an anterio-posterior axis.

The President showed a case macroglossia.

Dr Halley showed a patient with veldt sores.

Dr Buist gave notes of several cases illustrative of myomata, and showed the tumours from those he had operated on.

Professor MacEwan spoke on the cases, and agreed with Dr Buist that it was necessary in certain cases to operate owing to the circumstances of the patient, and mentioned some cases of his own in illustration.

Dr M'Gillivray gave his views on the advantages of protargol in ophthalmic work. He used it in a solution of the strength of 10 per cent. in catarrhal conjunctivitis, ophthalmia neonatorum,

gonorrheal conjunctivis, etc., and recommended it as better than silver nitrate. He had found no bad effects result from using it.

Mr Greig spoke of its use in urethritis, but said he used it in a weaker solution, and also referred to the pain it caused if a strong solution were used from the commencement of treatment.

The President referred to its use in bladder cases in a strength of ½ to 4 per cent. solution.

Mr Greig then spoke of a case of hydrocele of four years' duration, in which the fluid he had drawn off by tapping contained cholesterine crystals.

He next read notes of two cases of ectopic testicle on which he had operated, one in a child in which the testicle was behind the scrotum, the perineal form, the other in an adult in which the testicle was in Scarpa's triangle. In both cases the ectopic testicle was on the right side, and in both he placed the testicle in the scrotum. In the latter case the testicle had to be drawn through the conjoined tendon before passing it into and fixing it in the scrotum.

In both cases the testicles were normal, and he questioned the necessity for removing all retained testes. He preferred the name retained testis to that of undescended testicle, and preferred the classification adopted by British authors to that of French authors. He considered the retrovesical class given by one French author difficult to explain.

The President and others spoke on the subject.

Editorial Notes and News

Plague in Glasgow.

THE reappearance of plague in Glasgow is disquieting. As was anticipated, however, Glasgow, under the guidance of her able Medical Officer of Health, has acted strongly in the matter, and the disease may be said to be again stamped out. The only sinister element in the matter is that rats infected with plague have been found. This, if undoubtedly the case, seems to indicate that the disease has been lurking about the city all the summer; and, in a seaport town, the infection of rats opens a most unpleasant vista of possibilities.

The Lord Rector's Address at the Edinburgh University.

THE Marquis of Dufferin delivered his Rectorial Address on Thursday, the 14th of November, in the M'Ewan Hall, to an audience that packed every corner of the stately building. At the outset Principal Sir William Muir

indicated that the Lord Rector had been ill, and that if he did not feel equal to the task of reading the whole Address, part of it would be read by his Assessor. To the medical members of the audience it would have been a relief had this idea been acted upon, for his Lordship was clearly unfit for the physical strain of an Address which took nearly an hour and a quarter to read. Very little of the Address can have been heard in the galleries, and much of it was not even heard by those close to the speaker. The conduct of the students is deserving of all praise; indeed we were never more proud of the self-restraint of our students than we were on this occasion. An occasional rumble of restlessness and an occasional futile attempt at a song was all that threatened to break the respectful and sympathetic attitude of this great gathering of youthful spirits. When his Lordship had finished, the pent-up energies were given free licence, and it was in vain that other voices sought to be heard. Even the benediction was abandoned, and the function closed by the singing of "God save the King," led by the organ. After the Address there was a reception in the Union; and later there was a "Students' Night" at one of the theatres. On the night before the Address there was a torch-light procession.

As regards the Address itself we can only say that in addition to its great interest as indicating the outlook of one who has had a phenomenal experience of men and of nations, and its somewhat startling and outspoken estimate of the attitude of European peoples towards us, we were impressed by the lofty thought and tone which ran right through it, and which made us feel that so long as the country can throw up men of this mental, moral, and spiritual fibre, the race and the country are safe.

General Council of Edinburgh University.

THE statutory half-yearly meeting of this body was held on the 25th of October, and thus too late for any notice of it appearing in our last number. The meeting was large enough to indicate that matters of interest were expected to be considered. The retiring assessors in the University Court did not seek re-election, and Dr Grant Ogilvie and Mr Campbell Lorimer were elected in their stead. The joint reports of the business and finance committees were submitted and accepted. The first of those dealt with the Carnegie Bequest, and is reproduced in another part of the current number of this Journal. The second dealt with the decrease of students, which is practically attributed to general economic causes. When it approaches "the

practical question, how far, or in what directions, counteracting influences can be brought to bear upon the decrease of students," the report is very mild, and the suggestion that any alterations require "flexibility and adaptability in the teaching staff," is pathetic in its tone of hopelessness. Dr Greville introduced some pungency into the meeting by moving for returns to show the method of conducting practical classes. He spoilt his case by personal allusions, and his proposal was thrown out. If alterations are desirable, and we strongly hold they are, the position is at once prejudiced locally by the introduction of personalities and of personal attacks. It is the system which requires to be assaulted. In attacks on the methods at present in vogue in the University, it has, however, to be remembered that human nature is not so constituted that men readily surrender their legal emoluments, and that without such surrender readjustment of teaching was impossible, for want of funds. Now that the Carnegie Trust will supply some money, it remains to be seen whether the University will show the "flexibility and adaptability" necessary for its proper utilisation. We should be glad to have the views of any of our readers as to what line the Universities ought to take in regard to their medical faculties. The Universities may listen, and the Carnegie Trustees are, we doubt not, anxious to adopt the best possible course. We should be glad to have communications bearing upon the teaching of the individual subjects of the medical curriculum, particularly the more important of these.

General Medical Council Election.

WE would remind our readers that their voting-papers have to be in the hands of the Registrar by the 4th of December. The three candidates, Dr Bruce, Dingwall; Dr Robertson, Glasgow; and Dr Walker, Edinburgh; have all issued and circulated their addresses. There is thus an interesting geographical distribution of candidates, and we should be glad to see the profession taking a like wide interest in the election; but, with the exception of some of our brethren in the west, who are running a personal grievance, we see little signs of anything but apathy. Although our sitting member may not appreciate the assault on his seat, the fact that there are two other men in Scotland willing to sacrifice themselves on the altar of the General Medical Council is a fact not altogether to be deplored, and might even be an indication of an awakening of interest in the great body of the profession throughout Scotland.

The Report of the Plague Commission.

THE report of this Commission, which was presided over by Professor T. R. Fraser of Edinburgh, has just been issued in the form of five blue-books, extending in all to something like 2500 pages. It is a monument to the industry of the Commission, and it will doubtless be a mine of reference for all future time.

Journal of Medical Research.

THIS is the title of what is practically a new journal published in Boston. It is edited by Dr Ernst, and is supported by the American Association of Pathologists and Bacteriologists, and by the Boston Society of Medical Sciences. The first number, which has just come to hand, contains papers read at the annual meeting of the first-named Society in April of the current year. The number of papers is twenty-seven, all of them interesting if no one of any great outstanding value. We are glad to see Dr Ford Robertson's Hemolymph Glands resurrected, and we take this opportunity of saying that we are often impressed with the intimate knowledge American writers have of the literature of their subject, and of the fair and judicial manner in which they use it. The journal is to appear at irregular intervals as material is supplied. The present number runs to 297 pages, and contains a number of illustrations. We heartily wish those responsible for the conduct of this new departure every success.

Obituary

John Connel, M.A. St And., M.D., F.R.C.P.Ed., Peebles

THE news of Dr Connel's death must have come as a painful shock and surprise to a wide circle of professional and other friends. It seems as if it were only the other day that he was going out and in amongst his patients with his wonted cheerfulness and activity, and hardly had the outside world become aware of his illness when the sad intimation came that he had passed away.

Like many others who have risen to distinction in professional and other vocations of life, John Connel was a son of the manse, his father having been minister of the U.P. Church, Boness, and doubtless the home training which he there received had no small influence in evolving and directing those qualities

DR CONNEL, PEEBLES.

of mind and habits of thought which in maturer years gave evidence of a gifted and cultured intelligence.

Before commencing the study of medicine, and the more fully to equip himself for its successful practice, he passed through a course of Arts at the University of St Andrews, where he was a distinguished student, and graduated M.A. with first-class honours. In the early sixties he enrolled himself a student of medicine at the University of Edinburgh, and was fortunate enough to receive instruction from such distinguished teachers as Goodsir, Christison, Syme, and Simpson; and in most of his classes he took a very honourable, in several a leading, position. He became M.B. and C.M. in 1867, and went forward to the Doctorate of Medicine six years later. His student life was quiet and unostentatious, but marked by zeal, perseverance, and the earnestness which comes of a faithful resolve to make the most of his opportunities.

Shortly after graduating he was appointed assistant to Dr Junor, who at that time had an extensive and good class practice in Peebles and the upper valley of the Tweed, and on the death of that gentleman Dr Connel succeeded to it. Of the manner in which he discharged his duties professionally for the long period of thirty-four years to an ever-increasing *clientèle*, embracing all classes, from patients in the highest rank of society to those whom doctors in the country have always with them—the poor—it would be impossible to speak in too high terms of praise. In such a brief notice, the writer feels strongly that he may fall short of conveying to the readers of this Journal an adequate impression of all that Dr Connel was to his patients, and how much he was appreciated by them. As a medical practitioner he was singularly well fitted, both by natural gifts and professional qualifications, to command confidence and ensure success. Endowed naturally with a cheerful and hopeful buoyancy of disposition, his presence inspired encouragement and comfort at the bedside, whilst his knowledge of his profession, which was always fully abreast of all that was well established in the most recent facts of medicine and surgery, enabled him, along with a sound judgment, to do the best that was possible for those who placed themselves under his care.

Public recognition by the community amongst which he so faithfully laboured was not awanting, for in due course his name was placed on the Commission of the Peace for the county of Peebles, whilst the burgh elected him to the chairmanship of the School Board, a seat in the Town Council, and one of the directors of the Chambers Institute.

By his professional brethren in the country as well as in the city he was much esteemed, and to show their appreciation of

the many excellent qualities, social and professional, of which they believed him to be possessed, they elected him to various positions of distinction, notably President of the Border Branch of the British Medical Association, and also of the Obstetrical and Harveian Societies, probably the first instance of a country practitioner occupying the presidential chair of the latter two Societies. By his medical brethren he was accounted worthy of these honourable positions, and he fulfilled the duties thereof with much acceptance.

As a member of the medical profession, he represented in a remarkable manner all that was worthy of the highest traditions of our profession, while to those who had been privileged to enjoy his friendship for many years, his kindly greeting, warm, honest grasp of the hand, and personality of singular charm, will long be recalled with feelings of mingled admiration and affection. In the pleasant county town which nestles amongst the hills in the beautiful vale of Tweed, the memory of all that John Connel did to help on every good work which made for the social well-being and higher good of its inhabitants will long remain green, and will serve as an incentive to those who come after him. G. H.

Another valued correspondent sends us the following :—

By the death of Dr John Connel the medical profession in Scotland has lost one of its most able and cultured practitioners. Educated in Peebles at the Grammar School there, of which the late Dr Browning was headmaster, he graduated as M.A. of St Andrews with honours. He received his medical education in Edinburgh, where Christison, Syme, Simpson, and the two Begbies were in the zenith of their fame, so that when he graduated in 1867 he carried with him to Peebles the impress of great teachers which had an abiding influence for the rest of his life. He was associated in the first instance with the late Dr Junor, who was in all respects a country Begbie, and who thoroughly appreciated the excellent training and accomplishments of the young man who had come from Edinburgh to assist him. After Dr Junor's death Dr Connel succeeded to his practice, and although during the course of his career he received encouragement to settle in Edinburgh he preferred to remain a country practitioner.

He was so much appreciated by his professional brethren that he was elected President of the Obstetrical Society in Edinburgh, as also of the Harveian Society, at both of which he delivered addresses, which are left in the archives of the Societies as an evidence of the cultured man he was. He was

ever working, and although carrying on a large country practice, he found time to visit Edinburgh and Glasgow in order to study the eye, ear, throat, and the other branches of surgery which have made such advances in the last twenty years.

In connection with all his work he was exceedingly careful, and his patients recognised that in him they had a most skilful physician and surgeon, and one who, when in the least doubt, was the first to suggest additional advice, as many of his friends, both medical and surgical, in Edinburgh and Glasgow will remember, and they will not soon forget the bright, genial smile of John Connel.

For a number of years he has been assisted by Dr Kirkwood, who was the greatest comfort to him, and who enjoys the confidence of the district.

In addition to keeping himself abreast of the times in his own profession he studied French, German and Italian, and made frequent trips to the continent for relaxation. Latterly his chief study was astronomy, and six weeks before his death he had purchased a new telescope to carry on certain observations which were of interest to him. In all matters connected with the town of Peebles he was willing to give a helping hand. He was Chairman of the School Board, and was one of the foremost in improving the sanitation of the town. He bore his last illness with his usual fortitude, and was deeply grateful to his old friends Dr Russell and Mr Caird of Edinburgh for their help in easing his suffering during a very trying time. The appreciation in which he was held was evidenced on the day of his funeral by the large gathering from the town and county which assembled to show their respect for the memory of their late doctor. Much sympathy is felt for his widow, who is a daughter of the late Dr Junor. J. C. R.

Public Health Reports

Tenth Annual Report to the County Council and District Committees of the County of Dumbarton. By JOHN C. M'VAIL, M.D., D.P.H. Camb., F.R.S.E., Medical Officer of Health.

DR M'VAIL in this report gives an account of two new hospitals which have lately been opened, namely, the new Lennox Hospital for the eastern district of the county, and the new hospital at Dumbarton for the western district.

A considerable number of water analyses were made during the year.

The report states that architects and builders are now becoming better acquainted with the requirements of the local authority, and that therefore plans demand less revision than at first.

In the section on scavenging the report states that the difficulties formerly present in connection with the disposal of the refuse from the Vale of Leven Special Scavenging District have now been overcome, as a suitable depot has been obtained on the estate of Gallangad. Formerly the refuse was removed under contract, and sold by the contractor to farmers in the district. One result of this was a complaint of effluvium nuisance from the spreading of the manure on fields near dwelling-houses, and towards the end of the year it had even been questioned whether the deposit might not have had causal relationship with certain cases of cerebro-spinal meningitis which had occurred. The new depot is fortunately at a distance from any populous district.

Tenth Annual Report to the County Council and District Committees of the County of Stirling. By JOHN C. M'VAIL, M.D., D.P.H. Camb., F.R.S.E., Medical Officer of Health.

THE chief interest in Dr M'Vail's report centres round the reference he makes to the passing of the East Stirlingshire Water Act.

The condition of the water supply in the southern parishes of Eastern Stirlingshire has evidently been deplorable, and the passing of the Act has brought great relief to the minds of the District Committee and its officials.

The necessity for the new water supply is forcibly brought out by a detailed account of the conditions existing in the villages of the district. The engineer's notes on the new scheme are quoted, and the chief rating sections of the new Act are given.

As regards zymotic diseases the year had been a healthy one. Much progress is evidently being made in the provision of hospital accommodation for the burgh.

Tenth Annual Report upon the Health and Sanitary Condition of the County and Burghs of Clackmannan, 1900. By T. G. NASMYTH, M.D., D.Sc., D.P.H., F.R.S.E., Medical Officer of Health.

DR NASMYTH'S report shows progress in matters sanitary, although he apparently still experiences a good deal of trouble,

especially in the mining villages, in getting his plans carried out. The question of scavenging and cleansing is very fully entered into, as also is the question of water filtration. This latter arises in connection with the water supply of the town of Alloa, which is supplied from the Black Devon—a stream which, in the earlier part of its course, is polluted in various ways.

If the reports of the medical officers of health were more widely read the public could not fail to develop at least a certain amount of interest in public health matters.

New Books and New Editions

Surgical Diseases of the Kidney and Ureter, including Injuries, Malformations, and Misplacements. By HENRY MORRIS, F.R.C.S., etc. London and New York: Cassell & Co., Ltd. 1901. Price 42s.

MR MORRIS, in the preface to this work, writes: "Though largely based upon my personal experience, the work, without pretending to be of encyclopædic completeness, is also the outcome of long and extensive study of the writings of others." Renal surgery in its present form is the outgrowth of only twenty years. In 1884, when Mr Morris wrote his *Manual* on the surgical diseases of the kidney, the difficulty lay in obtaining information owing to the scantiness of material; but in writing the present work the author has rather found the mass of literature which required study a source of difficulty—not only new treatises, but innumerable papers having been published. This also applies to the surgery of the ureter, a branch of the subject which is of even more recent date. The work consists of two volumes, each containing nearly 700 pages, and with 200 illustrations, the majority of which are original and specially executed for the work, although many, and especially those illustrative of ureteral surgery, have already appeared in other papers or works by the author. Those which illustrate the regional anatomy of the kidney are particularly good, but all are clear and instructive, those depicting operative procedures upon the ureter and renal pelvis being especially useful to elucidate the text. Mr Morris discusses in detail, and with cyclopædic knowledge as well as practical experience, almost every abnormality, injury, or disease of the kidney, and adverse criticism of his work is not easy. One may differ from some of

his deductions, but the various points are so fairly stated that it is impossible not to admit his fair-minded consideration of the subject, and his experience is so great that one is almost compelled to believe that his conclusions are probably correct. We observe, however, with surprise that upon one of the greatest difficulties in the major operative work upon the kidney the author has practically nothing to say, and even what he writes is insufficient as well as inaccurate. One kidney is obviously diseased—the seat of a neoplasm or tuberculous deposit—and the question of excision arises: What is the condition of the other kidney, or indeed is a second kidney present? The latter point from its rarity may be ignored, but the former is of the first importance in prognosis and in deciding whether nephrectomy is justifiable. Can this be even approximately determined? In Volume i., Chapter iii., under the heading, Clinical Examination of the Kidney, inspection, palpation and percussion are described, and then almost casually other means of examination are referred to. X-rays in calculi have been employed in some cases with admirable effect, "but the results are most unreliable." Do expert radiographers admit this? Is it true? *The freezing test* has half a dozen lines devoted to it, and the normal freezing point of blood is erroneously given as $-0{\cdot}36°$ C instead of $-0{\cdot}56°$ C. This is perhaps merely a printer's error, but so important a point should have been noted and corrected. A method which is being more and more employed, and which in the opinion of Korányi, the introducer of it, Kümmel and others, is of the utmost value, surely deserves more extensive consideration in a work of this nature. So also with the methyl blue and phlorizin tests. The importance of careful systematic examination of the quantity of urea excretion does not seem to be even mentioned. Interureteral catheterisation is fully discussed, and the author may be justified in his general conclusions, although there are more cases in which it is valuable than he seems to think. If this method be discarded, one or other of the means at our disposal to gauge the state of the kidneys ought to be used. In this department of renal surgery it would almost seem that Mr Morris has not had much experience. Surgery to-day is so uniformly successful from the merely operative side that surgeons are at times apt to neglect the careful consideration of cases from the standpoint of prognosis. There is a diseased kidney which can be removed, but the risk of removal is not fully gauged, and deaths which might have been avoided by greater care in estimating the functionating power of the other kidney have resulted. Some of the methods to which the author refers so cursorily seem to be valuable in this direction, and it would have been better had

more stress been laid upon the importance of accurately and carefully applying them.

At present some kidney conditions have a special interest, and one naturally turns to the chapters dealing with them to learn Mr Morris's views. *Movable kidney* is now known to be of frequent occurrence, and in some cases to be a fruitful cause of symptoms which require treatment. The etiology of the condition has been a source of much speculation for many years, and nearly every writer on the subject has evolved a theory to explain its production. Mr Morris quotes profusely, but usually negatives the theory advanced, eventually observing as a cause what is more probably a result, viz., "deficiency in the fatty capsule . . . especially the absence or loss of the thick mass of it at the lower pole of the organ." Why this should occur more frequently on the right side than on the left side he does not state, and yet he agrees with others in believing that mobility is ten times more frequent on the right side than on the left. It would seem that the explanation of movable kidney is no nearer solution than formerly. The symptoms caused by mobility are fully described, and operation recommended in properly selected cases. Mr Morris has operated on ninety-eight cases with excellent results, and no mortality.

Tuberculous kidney.—The fact that primary tubercle of the kidney is not so uncommon as was formerly supposed is emphasised, and attention drawn to the frequency with which vesical symptoms may be present without bladder infection. Early operation is advocated and the feasibility of partial nephrectomy discussed. In referring to partial operations the author alludes (p. 255, Vol. ii.) to it as an important advance in renal surgery, and quotes two cases in which great success resulted. In one patient (p. 511, Vol. i.) from whom one kidney had been removed, a tuberculous area, equal to one-third of the kidney, was excised from the second kidney at a later period, and the patient is well four years after the second operation. On the other hand, in three out of seven cases secondary total nephrectomy was required. The method of procedure in partial excisions is described at some length (p. 258, Vol. ii.).

Neoplasms of the kidney and renal calculi are fully considered. Chapter xxvi. upon Calculous Anuria is well worthy of perusal.[1] In that part of the work devoted to ureteral surgery the author draws much upon his personal experience, and we observe that he is strongly in favour of conservative surgery,

[1] The various operations for these conditions are carefully and well described, and the particular methods used by the author specially referred to, and their advantages emphasised.

and makes note of conditions believed to be the cause of various pathological changes which are in reality secondary to them, and can be remedied by plastic operative procedures. The various plastic ureteral operations are clearly described and illustrated.

This book redounds greatly to the credit of its author, who has for long been recognised as a pioneer in renal surgery, who has advanced with the times and done much to place this special branch upon a secure and reliable foundation. Much time and thought have been expended by Mr Morris in its production, and all who read its pages must feel that the profession owes him a debt of gratitude for placing before it a work of the highest value.

Memoirs and Letters of Sir James Paget. Edited by STEPHEN PAGET, one of his Sons. Pp. 438, with portrait and other illustrations. London: Longmans, Green & Co.

BORN January 16th, 1814; died December 30th, 1899; for nearly eighty-six years James Paget lived a very perfect, stainless life. One of the Nestors of the professon of medicine, he was without doubt its Chrysostom. He occupied a space in the eyes of the profession and the public almost unique as the type of the fine flower of the noblest of the professions. As a teacher, a man of science, a hospital surgeon, and a man of affairs he made his mark. All the work to which he put his hand was done with all his might—as ever in the great Task-master's eye; and in every one of his lines of labour he left things better than he found them. We read of his early struggles with poverty, of his splendid work in the museum, in the school, and in the wards of St Bartholomew—of his well-earned success at last, of the wealth and honours with which his work was crowned; and yet, after all, the great factor remains that he was a high-toned Christian gentleman, whose character and conduct were ideal.

The fascinating book which lies before us consists of two parts. The first consists of memoirs or autobiographical notices of his life which were written between the years 1880-1885. Each chapter of this delightful sketch is accompanied by a commentary. The second part gives an account of his later life with letters, extracts from his writings, records of speeches, journeys, holidays, and work. The biographer has done his work so well that his own part in it is unseen or unnoticed. There are many admirable portraits. To review a work like

this is not an easy task. Were space sufficient the various stages of his brilliant career might be detailed. Much of his autobiographical sketch is so compact of wisdom that one could mark page after page for quotations. Stage after stage is won by steady work, well-directed effort, dominated by modesty, probity, and honour, so that when wealth and titles crown the life they seem the natural outcome, the fruit of the leaf and the flowers. A few quotations bearing at once on medical education scientific work, and professional success may be given.

In the chapter which relates his early education, Paget commends the old system of apprenticeship, and goes on to say :— "I think it is impossible to estimate too highly the influence of the study of botany on the course of my life. It introduced me into the society of studious and observant men; it gave me an ambition for success, or, at the worst, some opportunities for display in subjects that were socially harmless; it encouraged the habit of observing, of really looking at things and learning the value of exact descriptions; it educated me in habits of orderly arrangement. I can think of none among the reasons of my success—so far as I can judge of them—which may not be thought of as due in some degree to this part of my apprentice-life" (p. 27).

In the chapter called Waiting-Time, after the most interesting account of the position of St Bartholomew Hospital and School, we find this gem as to catalogue-making—"I described every specimen as I saw it standing or lying before me : nothing was to be told but what could be then and there seen; nothing that could be only imagined or remembered; there was to be mere translation from eyes to hand" (p. 85).

During waiting-time, his whole income from practice in seven years averaged £16, 10s. per annum.

Here is a pen portrait of the Treasurer of the Hospital done to the quick. Fortunate the hospital that has such a layman at the head. "He was a truly admirable man; an example of that admirable class, the rich merchant given to good works; men who make money with great care and give it away with as great liberality; men who are exact and orderly in business; sometimes even exacting when those they deal with are not needy; winning money as keenly as others will win games at cards; counting their money as the fairest estimate of their success in a difficult and honest competition, but once counted, giving it freely, and with it giving their time and strong will and knowledge to the management of great charities, etc., etc. Under his rule some of the greatest improvements in the buildings and arrangements of the hospital were made. The earnestness which he showed in the endeavour to make them, even at great

expense, as good as possible, was a novelty at that time, it has been merely habitual ever since" (pp. 123-4).

Several pages of extreme value on the subject of extempore speaking and lecturing with success is summed up as follows—"pretty good extemporaneous speaking is hardly more pleasing than pretty good eggs" (p. 134-5).

His election as assistant surgeon, and his acceptance of the Wardenship of the College are recorded in a most interesting chapter. We in Edinburgh find in the winter session of 1849 the name of William Turner associated with Thomas Smith, Jonathan Hutchinson, Hack Tuke, and Bickersteth. After eight years of Wardenship he writes in a dozen words the epilogue, "The Students have lived as their fathers would wish them to live" (p. 173). In 1844 he had married and begun an exceptionally happy and fortunate family life while he was still Warden, and in 1851 he removed to Henrietta Street, Cavendish Square, and fairly began to fight the battle as a Consulting Surgeon. The lean years were soon to pass away, but the secret of the manner in which he worked through them is given by his son. "He had the best sort of good health—he could turn in a minute from work to play—he could walk any distance, sit up to any hour—digest any food, sleep through any noise of traffic —was easily moved to laughter—and had the art of getting the utmost enjoyment out of his simplest pleasures" (p. 183).

This splendid health did not last for ever—for in the years when he was making a large income and working hard he had several attacks of pneumonia, and in 1878 the worst of all his illnesses, a terrible attack of blood-poisoning from infection at a *post-mortem* examination. He very nearly died, got terribly depressed, and desired a consultation. In number and eminence the consultants deserve mention. Sir Thomas Watson, Sir William Savory, Sir Thomas Smith, Dr Andrew and Dr Gee. Sir William Jenner was prevented from being present as the Queen had wished him to be. Notwithstanding the number of consultants the patient recovered!!

The chapter on Private Practice—describing and explaining his "complete success," is a most remarkable one and self-analysis that sounds as if written from the outside, and might be quoted entire. "I was not disqualified by any of the gravest hindrances to success; as by being habitually idle, time-wasting, unbusiness-like, unpunctual, uncivil, unable to work with others (p. 185). Nor could I fairly assign any part of my income to self-advertisement, or sheer impudence, extortion, unfairness, or mere greediness" (p. 186).

The pages on the "*ways out of practice*" are characterised by remarkable shrewdness. Invalidism is easily understood, but

that prosperity and a title should act adversely to practice is more remarkable, and at first not so simple a problem. The Autobiography closes with a few pages on Medical Politics which convey a lesson to would-be Reformers in a hurry, which, however, they will never learn.

We can, in the rest of the work, in his letters, and in records of his public utterances, follow out the course of his wise, useful, and successful career. Honours given him by his professional brethren at home and abroad . . . we can follow him through a graceful old age to a retirement complete and uncomplaining, in which the infirmities and limitations of great age are borne with calmness till the hands are folded in a painless and serene departure.

Hygiene and Public Health (Lewis's Practical Series). By Louis Parkes, M.D., D.P.H. Lond. Univ.; and Henry Kenwood, M.B., D.P.H., F.C.S. London: H. K. Lewis, 136 Gower Street, W.C. 1901. Price 12s.

This work is a revised and enlarged edition of the well-known work on Hygiene by Dr Louis Parkes, which has already run through five editions. This latter work has during the past ten years been regarded as one of the best manuals on the subject, and the present work, written in collaboration with Dr Henry Kenwood, will more than uphold the reputation of the authors. It follows the lines of the previous one, but every chapter bears evidence of careful revision and recasting in the light of scientific advances which have been made in the subject of public health within recent years.

The first chapter on Water and Water Supplies is thoroughly up to date. On page 30, however, we observe a curious omission. Referring to the Report of the River Pollution Commissioners on the Pollution of Shallow Wells, the authors have omitted to give a quotation (which appears in the previous work) to which they immediately refer as "the above passage."

We observe with satisfaction that the details of the methods of water analysis have been omitted, and a chapter added on the interpretation to be put on the results of such analyses. The same plan has been followed in the cases of air, milk, etc. The chemical processes involved in these investigations are more fully detailed in the various manuals on laboratory work.

In the next part of the work dealing with the Disposal of Refuse, an excellent chapter has been added on the Biological Purification of Sewage, in which the most recent and most promising methods of sewage treatment are graphically

described—such as the Septic Tank system and those of Dibdin, Scott-Moncrieff, and Colonel Ducat.

The chapter on Air and Ventilation contains, in addition to the information so fully given in the previous work, some very excellent and practical remarks on "Offensive Trades" and "Industrial Poisonings," along with a description of the sanitary precautions necessary for their prevention. The chapter on Soils and Building Sites has been enlarged by a few remarks on Roadmaking, and a short dissertation on the Sanitary Construction of the House. Much new material also appears in tha part of the work treating of Food, Beverages, and Condiments. A chapter on the Feeding of Infants has been added; and that on the Important Parasites of Flesh has been so much enlarged as to be practically new, and it now includes the gist of the Report of the Royal Commission (1895) on Tuberculosis.

One of the most important parts of the work is necessarily that dealing with Contagia and Communicable Diseases. This has been carefully revised in the light of recent pathological and bacteriological researches, and has been brought thoroughly up to date. The subjects of Tuberculosis, Plague and Malaria, and several others, have been added, and the information given can always be relied upon as that of the most recent and trustworthy views on the matters dealt with. The Epizootic Diseases (anthrax, glanders, rabies, foot and mouth disease, etc.) are also treated with great care. The chapter on Disinfection has been re-written, and the subject is treated very fully and with scientific accuracy. We observe, however, that amongst the liquid disinfectants considered worthy of notice no mention is made of some of the coal tar products such as creolin, izal, and Jeyes' fluid. The somewhat difficult and perplexing subject of Vital Statistics is dealt with at some length, and is made clearer and more readily apprehended than is the case in most of the ordinary manuals on Public Health. A chapter on Sanitary Law and Administration has been added to this work. This chapter, however, deals mainly with English law, but the principal provisions of those Acts which apply to Scotland are also explained, and this will be found of great service to anyone who desires a general broad view of the various Acts dealing with public health matters.

The whole work is excellently arranged, and is written with great clearness and precision. Altogether this work, from its completeness and scientific accuracy, is one which can be thoroughly recommended to students of hygiene and to practitioners generally who desire to possess a work which contains within reasonable compass the most important facts relating to public health.

A Text-Book of the Practice of Medicine. By JAMES M ANDERS, M.D., Ph.D., LL.D., Professor of the Practice of Medicine and of Clinical Medicine in the Medico-Chirurgical College, Philadelphia, etc. Fourth edition, thoroughly revised. Pp. 1292, with 83 figures. London: W. B. Saunders & Co. 1900. Price 24s. net.

THE third edition of this work appeared in September 1899, and was so quickly exhausted that a fourth issue became necessary a year later. Under these circumstances criticism seems almost unnecessary, for there is ample evidence of the favour with which the book has been received.

We have gone over the present edition carefully, and are satisfied that it has not only been thoroughly brought up to date, but that its usefulness has also been increased by many valuable additions.

The section on Infectious Diseases is very well done. Lobar Pneumonia and Acute Rheumatism are placed among these disorders, and we think properly so, in the light of recent bacteriological research. The articles on Typhoid Fever, Lobar Pneumonia and Whooping Cough are particularly good.

The part of the work devoted to a consideration of the Diseases of the Circulatory System is fairly complete, and the article on Ulcerative Endocarditis is an excellent one. The remarks on Tricuspid Disease might be made more instructive by giving a *résumé* of the admirable work of Mackenzie on this subject. The section on the Neuroses of the Heart is capable of some improvement in a future edition — the article on Arrhythmia might be considerably simplified, and an attempt should be made to classify the various forms of pulse irregularity.

Dr Anders has made differential diagnosis a valuable and distinctive feature of his book. This has in many instances been put into tabulated form, and the chief diagnostic points, in diseases closely resembling one another, are thus appreciated at a glance.

In the consideration of tubercular meningitis under the head of "Diagnosis" the following passage occurs: — "Post-basic meningitis gives the same symptoms, and lumbar puncture is the only means of diagnosis. In tubercular meningitis the diplococcus is found." A printer's error is probably the explanation of the latter statement, because the presence of the diplococcus is *not* associated with the tubercular variety of meningitis. And we cannot agree with Dr Anders that lumbar puncture is necessary to differentiate the two varieties of this disease. In most instances, we think, there should be little difficulty. The posterior basic form is distinguished, among

other things, by the earlier age at which it occurs; the more sudden onset; the persistence of marked head retraction; as well as by its more chronic course.

The book is eminently a practical one, and in this connection we may specially commend those sections relating to treatment. Dr Anders has succeeded here, where many others have failed, in giving just the kind of information which will be most acceptable to the young practitioner. His directions as to general and therapeutic treatment are exceedingly judicious, and are evidently based upon a large and varied clinical experience. No similar text-book on medicine with which we are acquainted deals so excellently with the question of treatment, and for this reason we believe it is essentially a book which will prove of greater service to the general practitioner than to the student of medicine.

The present edition forms a reliable guide to the present state of our knowledge of the practice of physic, and is sure to retain its popularity with the senior student and practitioner.

Introduction to the Study of Medicine. By Professor G. H. ROGER, Paris. Authorised translation by M. S. GABRIEL, M.D., with additions by the author. 4to, pp. 538. London: Henry Kimpton. 1901. Price 21s.

THE University of Paris has instituted a course of lectures specially intended for those entering upon the study of medical science, and the present work comprises the course delivered to the students by Professor Roger.

The author in his preface says that he has endeavoured to show what is the object of medicine, and by what means it may be studied. We cordially agree with him in opposing the tendency of some modern authorities who think that the solution of problems raised by the examination of patients can be found in laboratory researches. No one can doubt the value of experimental pathology, but at the bedside the physician must rely on clinical procedures, and it is only in rare cases that more delicate methods of investigation are required.

After having explained the genesis of sickness, Professor Roger goes on to consider the causes which constantly tend to modify this unstable state of health. Under separate chapters he treats of the mechanical, physical, chemical, and animate causes of disease. That chapter devoted to General Etiology of Infections is particularly interesting.

In discussing outbreaks ef enteric fever amongst soldiers quartered in villages where the disease had not been seen for

years previously or on board ships five or six weeks after leaving port, the author says that we do not need to accept such a hypothesis as that of Roux, who states that the typhoid bacillus is merely a modification of the colon bacillus, because it has been proved that the typhoid bacillus occurs in the intestinal contents and fæces of healthy persons. This explains therefore the apparently spontaneous development of the disease under such circumstances.

We note that Professor Roger states that diabetic coma is often induced by the ingestion of too much meat, and that the attack may be precipitated by fatigue, or may result from a journey.

The chapter on Heredity is interesting and well written. As regards tuberculosis, it is interesting to find the author saying that to-day the world agrees in considering all cases of tuberculosis in mammals as due to the same microbe. In consequence of some experimental researches, it was believed that tuberculosis of birds depended upon a special bacillus. This opinion, which has given rise to lively discussion, seems now to have been finally abandoned. The avian bacillus is merely a special variety of the ordinary bacillus tuberculosis. In parrots tuberculosis is a frequent affection (generally of human origin), manifesting itself chiefly in cutaneous lesions. The bacilli are found in great numbers in these affections of the skin, in the saliva, nasal secretion, and excrement. Tuberculous parrots thus represent a very serious danger to man.

The section devoted to the examination of the sick, though succinctly written, extends to ninety pages. Other chapters deal with nerve reactions, disturbances of nutrition, inflammation, septicæmia and pyæmia, tumours, cellular degenerations, evolution of diseases, clinical application of scientific procedures, diagnosis and prognosis, and therapeutics.

The wide scope of the work will thus be evidenced, and we have every confidence in recommending the work to senior students of medicine of medical practitioners. The translation has been exceedingly well done, though obviously by an American. A useful table for reducing the metric into the English equivalent concludes a valuable and well-written work.

Manuale del Massaggio del Dottor Romolo Majnoni. (Handbook of Massage by Dr ROMOLO MAJNONI.) Pp. 180, with 51 woodcuts. Milano: Ulrico Hoepli. 1901.

THIS is one of the popular series of Italian medical and scientific works, published by Ulrico Hoepli of Milan. The series contains

no fewer than 700 works. With regard to the present volume, the author, Dr R. Majnoni, says that he has endeavoured to compress within the smallest possible space what is known of massage, of its therapeutic action, and the technicalities concerned therewith, and of the various diseases which are conveniently treated by this means. At the same time he admits that through lack of space much has had to be omitted, and for the sake of those who wish to gain a more extended knowledge of the subject, he appends a bibliographical list, occupying fifteen pages. The book deals in turn with the physiology of massage, the methods (illustrated by 16 woodcuts), and the use of this special kind of treatment in joint affections, fractures, muscular, nervous, circulatory, digestive, and urino-genital disorders, and in orthopedics. The last chapter is devoted to a consideration of vibratory massage of the mucous membranes of the nose, pharynx, and eyes. The book forms a handy manual for the use of Italian medical men, and for those who are at home in that language.

A Text-Book of Practical Therapeutics, with Especial Reference to the Application of Remedial Measures to Disease and their Employment upon a Rational Basis. By HOBART AMORY HARE, M.B., B.Sc. Eighth edition, enlarged, thoroughly revised, and largely re-written. 8vo, pp. 798, illustrated with 37 engravings and 3 coloured plates. London: Henry Kimpton. Price 21s. net.

THE appearance of the eighth edition of this well-known work in rapid succession to the foregoing editions, is the surest testimony that it meets the requirements of a large section of the profession. In the present edition many therapeutic facts of interest have been added, and the value of the book has been greatly enhanced by the introduction of a number of illustrations showing those portions of the body upon which drugs exercise their dominant influence. It is certain that these additions will be much appreciated by the student, and will assist him considerably in his methods of acquiring a rational understanding of the action of medicines.

The conception and plan of Dr Hare's work areadmirable. He first discusses the physiological actions and therapeutic uses of drugs, and then, in the latter half of the volume, he attempts to show the clinical application of the medicines to the various diseases. This part of the work, headed " Diseases," unavoidably encroaches on the province of practice of medicine, and the busy practitioner who, at short notice, requires a ready reference

book, will often find sufficient information here to tide him over a dilemma. But he must not expect too much, for in many cases the work is disappointing in this respect.

The section dealing with remedial measures other than drugs contains much useful information of a kind which it is often difficult to find when it is specially wanted. Here the practitioner will obtain excellent descriptions of the uses of heat and cold, of counter-irritation, transfusion, etc., and also some account of the preparation of foods for the sick.

The printing of the volume is excellent, and the diagrams, introduced in order to illustrate the physiological action of drugs, are quite sufficient for that purpose.

We may confidently predict that the work will remain popular with medical readers.

A Text-Book of Pharmacology and Therapeutics, or the Action of Drugs in Health and Disease. By ARTHUR R. CUSHNY, M.A., M.D. (Aberd.), Professor of Materia Medica and Therapeutics in the University of Michigan. Second edition, revised and enlarged. Pp. 732. Rebman, Limited. 1901. Price 17s. 6d. net.

THIS is undoubtedly the best text-book of pharmacology in the English language. It is written from a purely pharmacological standpoint, and the therapeutics are, in consequence, mainly such as can be deduced or discussed from this point of view. Such a work, we think, has long been necessary. It carries a student on from the purely preliminary subjects of his training to the more practical one of treatment. This is recognised by the author. He states that his "object has been to bridge over the hiatus which exists between the phenomena occurring in the normal organism, and those which are elicited in the therapeutic use of drugs, to show how far the clinical effects of remedies may be explained by their action on the normal body, and how these may in turn be correlated with physiological phenomena." And in this he has well succeeded.

But it is not merely a student's text-book. It will be found valuable by all who wish to know the present views regarding the actions of drugs, and the bearing these have upon therapeutics. The pharmacology is well up to date, and has evidently been written by one who is thoroughly acquainted with his subject. The scientific character of the work is apparent in the opening sentence where pharmacology is defined as "the study of the changes induced in living organisms by the administration

in a state of minute division of such unorganised substances as do not act merely as foods." And this character is maintained throughout the work.

The book is divided into seven parts. There is an introductory chapter dealing with the mode of action, the classification, administration, etc., of drugs, and the relation between chemical composition and physiological action. This is followed by Part I. dealing with "organic substances which are characterised chiefly by their local action." This includes demulcents, emollients, flavouring substances, bitters, etc., and also the vegetable purgatives and astringents. Part II. is devoted to "organic substances characterised chiefly by their action after absorption," and comprises the greatest part of the work. The substances are dealt with in groups which are named, after Schmiedeberg's plan, by the predominant member of the group. Part III. comprises "combinations of the alkalies, alkaline earths, acids and allied bodies; and Part IV. is devoted to the "heavy metals." In Part V. "ferments, secretions, and tox-albumins" are considered; and in Part VI.—the concluding part—"menstrua and mechanical remedies." Very little materia medica (pharmacognosy) or pharmacy is given, but all the preparations of the B.P. and U.S.P. with their doses and strengths (where necessary) are mentioned.

Altogether, we have nothing but praise for the book. The therapeutics, in some parts, is a little indefinite, and a few clerical errors have been overlooked, but these are the only faults, if such they can be called, that we have been able to find. That the book has been appreciated is evident from the fact that a second edition has been called for in little more than a year.

"PHARMAKON."

On Paralysis Agitans, with an account of the clinical features of other forms of Tremor. By R. T. WILLIAMSON, M.D. (Lond), F.R.C.P., Physician to the Ancoats Hospital, Manchester, and Assistant Lecturer on Medicine, Owen's College. Pp. 70, with 10 illustrations. Manchester: Sherratt & Hughes. 1901.

AN excellent account is given of Paralysis Agitans, about which one does not expect to hear much that is new. The symptomatology is described in a clear, straightforward way, and is illustrated by a few good photographs; the main facts known as to the pathological anatomy are given in some detail, as also the views held regarding the pathology. Under ætiology, importance is attached to mental emotion, mechanical injury and overstrain,

and illustrative cases are given. The treatment can aim only at relieving the discomfort of the patient; life as much as possible *in the open air* is strongly advocated, as tending to diminish not only the tremor, but also the distressing subjective sensations, while, among drugs, *hyoscine hydrobromate* has been found by the author to be most useful. He gives it by the mouth, well diluted in chloroform water, beginning with a dose not larger than $\frac{1}{150}$ grain and cautiously increasing it up to $\frac{1}{100}$ grain or more; in some cases cited the best effect was got by considerably larger doses, *e.g.* $\frac{1}{64}$ grain, toxic symptoms being carefully watched for (*e.g.* dryness of the throat). By relieving the tremor, restlessness and other subjective symptoms, hyoscine may also overcome sleeplessness.

An excellent analysis is given of the clinical characteristics of the various forms of tremor. The remarks on the handwriting and on the attempts to draw a straight line in the various forms of tremor are of special interest, and very good specimens are given at the end of the book.

The work is a thoroughly readable one and should be of interest to a large number of our readers. The letterpress is excellent.

Atlas and Epitome of Labour and Operative Obstetrics.—By Dr Oskar Schaeffer, Privat-docent in Obstetrics and Gynecology in the University of Heidelberg. Authorised Translation from the Fifth Revised German Edition. Edited by J. Clifton Edgar, A.M., M.D., Professor of Obstetrics and Clinical Midwifery in the Cornell University Medical College. Pp. 111, with 14 coloured plates and 139 other illustrations. London and Philadelphia: W. B. Saunders & Co., 1901. Price 9s.

This is the companion volume to the Atlas of Obstetric Diagnosis and Treatment by the same author, and it has the same characters. It is really a pocket atlas of the mechanism of labour and of obstetric operations, both manual and instrumental, with a condensed account of these, which is little more than an expanded description of the plates. It cannot take the place of demonstrations upon the "phantom," still less can it replace clinical teaching in the Maternity Hospital; at the same time, by means of copious illustrations, it certainly is capable of giving a clearer and more vivid representation of the phenomena of parturition and of the plans of operative interference than is to be gained from the ordinary text-books of Midwifery. The

plates and illustrations are good and the letterpress is lucid, and so far the book is very valuable; but there are defects, or rather, peculiarities, which become defects in the case of the English-speaking student. The nomenclature, for instance, is purely German, and on that account almost unintelligible sometimes to the British medical man; the instruments depicted are also German in most cases and unfamiliar to a large extent; and the classification of labours and the arrangement of the various operative procedures are unlike those found in British obstetric text-books. For instance, the presentations are divided into three clinical or prognostic groups, viz., the favourable, the unfavourable, and the relatively favourable. To the teacher of obstetrics, however, be he of whatever country he may, the book is a valuable addition to the literature and teaching of his subject.

Outlines of the Diseases of Women. By JOHN PHILLIPS, M.A., M.D. (Cantab), F.R.C.P., Obstetric Physician to King's College Hospital, etc. With 120 illustrations and 2 appendices. Third edition, revised and enlarged. London: Charles Griffin & Co., Ltd. 1901.

THIS work retains in this, its third edition, all the good points referred to in our review of the earlier issue. There is a new chapter on the bacteriology of the genital tract.

Burdett's Hospitals and Charities, 1901. By Sir HENRY BURDETT, K.C.B. London: The Scientific Press, Ltd. Price 5s.

Burdett's Official Nursing Directory, 1901. By Sir HENRY BURDETT, K.C.B. Fourth year. Price 3s.

THESE two useful volumes need no introduction, as they are now well known in the medical and nursing professions. We are glad to see that in the opening chapter of the first-mentioned volume, on "Royalty and Charity," a fitting tribute is paid to the wisdom and liberality of our late Queen in this field. The chapters on the administration of hospitals and other charities are practical and useful.

List of Books Received

From J. & A. Churchill, London.

A Text-Book of Medicine. Begun by the late Charles Hilton Fagge, M.D., completed after his death and since rewritten by Philip Henry Pye-Smith, M.D. Fourth Edition. In two volumes. Vol. i. Price 21s.

A Manual of Minor Surgery and Bandaging. By Christopher Heath,

F.R.C.S., etc. Twelfth Edition. Revised by Bilton Pollard, F.R.C.S. Price 6s. 6d.

An Introduction to the Bacteriological Examination of Water. By W. H. Horrocks, M.B. Price 10s. 6d.

Outlines of Gynæcological Pathology. By C. Hubert Roberts, M.D. Price 21s

A Manual of Practical Anatomy. By the late Professor Alfred W. Hughes, M.B., M.C. Edin. Edited and completed by Arthur Keith, M.D. In three parts. Part I., Upper and Lower Extremities. Price 10s. 6d.

A Short Practice of Midwifery. By Henry Jellett, M.D. Third Edition. Price 3s. 6d.

The Pharmacopeia of the Hospital for Diseases of the Throat, Nose, and Ear. Edited by H. Lambert Lack, M.D., and Charles A. Parker, F.R.C.S.Ed. Sixth Edition. Price 2s. 6d.

From C. Naud, Paris.

Matière Médicale Zoologique. Par H. Beauregard.

From Longmans, Green & Co., London.

Anatomy, Descriptive and Surgical. By Henry Gray, F.R.S. Edited by T. Pickering Pick, F.R.C.S., and by Robert Howden, M.B., C.M. Fifteenth Edition. Price 32s.

A Practical Guide to the Administration of Anæsthetics. By R. J. Probyn-Williams, M.D. Price 4s. 6d

Diseases and Injuries of the Teeth. By Morton Small, M.R.C.S., L.D.S. and J. F. Colyer, L.R.C.P., L.D.S. Second Edition. Price 21s.

Memoirs and Letters of Sir James Paget. Edited by Stephen Paget, one of his sons. Price 12s. 6d.

From H. K. Lewis, London.

Elements of Practical Medicine. By Alfred H. Carter, M.D. Eighth Edition. Price 10s. 6d.

Gonorrhœal Arthritis. By L. Vernon Jones, M.D. Price 2s. 6d.

From Rebman, Ltd., London.

Laryngeal Phthisis. By Richard Lake, F.R.C.S. Price 7s. 6d.

International Directory of Laryngologists and Otologists. Compiled by Richard Lake, F.R.C.S. Second Edition. Price 5s.

Uterine Fibromyomata. By E. Stanmore Bishop, F.R.C.S. Price 15s.

A Manual of Bacteriology. By Herbert U. Williams, M.D. Second Edition. Price 7s. 6d.

The Pocket Formulary for the Treatment of Disease in Children. By Ludwig Freyberger, M.D. Third Edition. Price 7s. 6d.

A System of Physiologic Therapeutics. Vol. iii. Two books. Price 21s.

The Therapeutics of the Röntgen Rays. By Dr E. Schiff. Translated by W. Deane Butcher, M.R.C.S. Price 3s. 6d.

The Surgical Anatomy and Operative Surgery of the Middle Ear. By A. Broca. Translated by Macleod Tearsley, F.R.C.S. Price 3s. 6d.

Water, and Water Supplies. By John C. Thresh, D.Sc. (Lond.), M.D. Third Edition. Price 7s. 6d.

Diseases of the Intestines. By John C. Hemmeter. In two vols. Vol. i. Price 50s. for the two volumes.

From Baillière, Tindall & Cox, London.

The Pocket Gray. By the late Edward Cotterell, F.R.C.S. Fifth Edition, revised and edited by C. H. Fagge, M.B., M.S. (Lond.). Price 3s. 6d.

From Swan, Sonnenschein & Co., Ltd., London.

Psychology. By Charles A. Mercier, M.B. Price 15s.

From Mr Longhurst, Newcastle-on-Tyne.

Manipulation (or Massage). By John Andrews Peters.

From T. Fisher Unwin.

Alcoholism. By G. Archdall Reid, M.B., C.M. Price 6s.

From W. B. Saunders & Co., London.

Dose-Book and Manual of Prescription Writing. By E. Q. Thornton, M.D. Second Edition.

A Laboratory Course in Bacteriology. By Frederic P. Gorham, A.M.

Atlas and Epitome of Special Pathologic Histology. By Docent Dr Hermann Dürck. Vol. ii. Trans. by Ludwig Hektoen.

Nervous and Mental Diseases. By Archibald Church, M.D., and Frederick Peterson, M.D. Third Edition.

The Principles of Hygiene. By D. H. Bergey, M.D.

From Henry Kimpton, London.

The Principles and Practice of Medicine. By William Osler, M.D. Fourth Edition. Price 18s.

Manual of the Diseases of Children. By John Madison Taylor, M.D., and William Wells, M.D. Second Edition. Price 21s.

The Care and Feeding of Children. By L. Emmett Holt. Second Edition.

From William Green & Sons, Edinburgh.

The Accessory Sinuses of the Nose. By A. Logan Turner, M.D.

From John Murray, London.

The Impressions of a Doctor in Khaki. By Francis E. Fremantle, M.B., B.Ch. Oxon. Price 10s. 6d.

Photographic Atlas of the Diseases of the Skin. By George Henry Fox, M.A. Parts VII. VIII. IX. X. XI. XII.

The Indian Plague Commission. Minutes of Evidence and Reports, Five volumes.

NOTICE.

All communications to the Editorial Department, including Exchanges and Books for Review, should be addressed to THE EDITOR, Dr W. RUSSELL, 3 *Walker Street, Edinburgh, and all business communications, including Subscriptions, Advertisements, &c., to* THE SUB-EDITOR, Dr NORMAN WALKER, 7 *Manor Place, Edinburgh.*

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